The Builder.

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The California University Competition.

THE arrangements for this proposed great international competition have now assumed a definite form. The programme and conditions are comprised in a pamphlet of nearly forty pages, issued by "The Trustees of the Phœbe Hearst Architectural Plan," 217, Sansome-street, San Francisco, but of which copies, we believe, can be seen or obtained at the Institute of Architects. It may be useful, however, to notice here some of the main points of the programme.

The competition is for a general scheme for the whole laying out of the ground and arrangement of the buildings, "the guiding thought of the entire undertaking," so that, although the whole cannot be carried out at once, those buildings which are erected from time to time may all be carried out as portions of one great design. The competition will be a double one, Preliminary and Final; the final competition, as usual in such cases, being between a limited number of competitors selected from the preliminary competition. It appears, however, that even the preliminary competition will be a matter of considerable detail, as the "general plan" will indicate all the buildings in detail, and not in block only, to a scale of 100 ft. to the inch. The other drawings will be a general elevation and a general section, to the same scale as the plan. The authors will each use his own judgment as to which points of the design he will take for his section and elevation; and as each competitor is to be allowed full liberty to arrange the buildings and sites as he thinks best, it would be difficult to specify any special line for the section or elevation.

The jury will select not less than ten plans from the preliminary designs, but have power to select more. If only ten are retained, their authors will each be entitled to a premium of 300*l.*; if more than ten and not more than fifteen are selected, the premium will be 240*l.* each; if more than fifteen are selected, 200*l.* each. This arrangement seems rather illogical, from the point of view of the architects, as one cannot see why any one man should receive less for his labour on account of the proportion of merit in the other competitors; and as there seems to be plenty of money, we should suggest that it would be much more fair and logical to give the same premium to all those whose works are selected for the final competition, independently of their number. The premiums are not, however, to be paid at once; one-third of the sum is to be paid down, and the remainder after the competitor has sent in drawings for the final competition. This is, however, independent of the premiums specially attached to the final competition, for which a sum of 5,000*l.* has been set aside; of this at least 1,600*l.** will be awarded to the plan classed as No. 1, and at least five of the final competitors will receive premiums; but the jury retain the right of distributing the total allotment among a greater number of competitors if they think fit.

In the final competition a general plan, section, and elevation are again required, accompanied by a general perspective view, all the three latter, as before, to be taken at any point the competitor prefers. What further drawings may be required will be decided by the jury after the preliminary competition; they may require the competitors to give drawings of one division or set of buildings; to a larger scale, we presume, than that of the general plan, though that is not stated in so many words. We observe also that no statement is made as to the scale to which the general drawings are to be made for the final competition; as far as appears, they are to be the same as in the first competition; but the fact that the scale is not defined appears to be an oversight. The point is of some importance as an indication of the amount of work a selected competitor will have to go through before his chance of ultimate success in the final competition. If the scale for the general plans is to be the same, there does not appear to be any reason why a competitor might not send in his general plans again for the final competition, if he is entirely satisfied with them. In connexion with this point, however, it may be mentioned that a competitor selected in the preliminary competition has full liberty to modify his designs for the final one, and is not obliged to adhere to his first scheme. All descriptive writing on the plans is to be on the rooms described and not in the margin (a provision, obviously, against the possible waste of time of the jury in referring to schedules and reference letters), and it is all to be in English; no other language will be recognised. For a competition open to all the continental countries we should have thought French would have been more convenient.

The preliminary competition is to be decided by a jury of five architects, viz.: Mr. Norman Shaw, R.A. (London), M. Pascal (Paris), Professor Wallot (Dresden), Mr. Walter Cook (New York), and Mr. J. B. Reinstein (San Francisco). We are rather surprised that the committee did not apply to Mr. Waterhouse to be the English representative on the jury; in that particular function his name, we should imagine, would command more confidence with English competitors (if there are any) than that of any other English architect, more especially as this is a case in which plan is of the highest and most essential importance, and Mr. Waterhouse is a master of plan. For the final competition the jury will be composed of the five members of the preliminary jury, and of four architects who will be chosen by the Phœbe Hearst Trustees, assisted by lists of names proposed by the competitors who are selected in the preliminary competition, each of whom will be invited to send five suggested names, the four who have most votes to be selected, subject however to proper provision for the international character of the jury.

The preliminary designs are to be delivered, not in San Francisco, but to the care of the United States Consul at Antwerp, by July 1 of this year. No date is yet fixed for the conclusion of the final competition, but it is stated that the selected architects will have not less than six months given them to mature their designs; and they will moreover, if they wish to study the site, receive, under certain conditions, first-class transportation and expenses for the journey from their places of residence to San Francisco and return; a provision both liberal and sensible. There is to be no exhibition of the general collection of preliminary plans, but after the final competition the final and preliminary plans of all those who take part in it will be exhibited at

* In the programme the sums are given, naturally, in dollars; we give them here in English currency.

the Mark Hopkins Institute of Art at San Francisco.

The programme has been deposited at various centres in different cities, that for London being the Institute of Architects.

Such is the outline of the arrangements for this very exceptional and perhaps unprecedented architectural competition, concerning which it is difficult to predict whether it is likely to result in a grand success or a *fiasco*. The ultimate prize, for the man who comes out the winner in the final competition, is no doubt a grand one; but the work to be done for even the preliminary competition is so serious that it may be questioned whether many architects who are already in possession of a fair practice will care to go through it for the chance of selection to enter the final competition; for the premiums in the preliminary competition, though they may be thought liberal in comparison with ordinary competition standards, will by no means recompense the work to be undertaken. This will be realised at once when we say that the general plan includes no less than twenty-eight blocks of building, many of which must be extensive and elaborate in plan, and the plans of all of which must be given in as much detail as can be shown on the scale of 100 ft. to an inch. The following is the list of these Departments, the requirements of which are in some cases drawn out at considerable length; we must content ourselves here with merely indicating the principal rooms required in some of the more important blocks:—

1. Administration: Including entrance to the University, offices of the president and secretaries, and for the meetings of regents and professors, reception-rooms, ante-rooms, committee-rooms, hall of records, &c.
2. University Library: For 750,000 volumes, with large reading-room, hall for papers and periodicals, study-rooms, &c.
3. University Museum: Provision for art, antiquities, ethnology, &c.
4. Auditoriums: Two, each adapted to lecture, concert, and theatre purposes, for 5,000 and 1,500 persons respectively, and a garden arranged for celebrations and receptions.
5. Military Establishment: Four lecture rooms, library, museum, gallery of models and drawings of military works, armoury, drill field, &c.
6. Gymnasia: Two large halls for exercises, each with 200 dressing-rooms, and 100 shower baths; two swimming tanks, large field for athletic games, with stands and seats, "treated in a monumental and majestic style."
7. Printing and publishing Establishment.
8. Habitation: for 3,000 students, and for head of the Material Department and family, assistant doctor, superintendents, employees and workmen, &c., and two dining establishments for students.
9. Club Houses: Four, with all modern appointments.
10. Infirmary.
11. Approach and Communication: Porticos, galleries or corridors, interior staircases, elevators, &c.; covered communications between the various groups.
12. Buildings for the General Service: A central plant for production of power, heat, and light; workshops; telegraph and telephone stations; warehouses; fire department station, &c., &c.
13. The Departments of Instruction in general: Various adjuncts required in all the groups—cloak-rooms, lavatories, department libraries, study-rooms, &c.
14. Department of Philosophy and Pedagogy: Eleven lecture-rooms, twelve laboratories, &c.
15. Department of Jurisprudence: Eleven lecture-rooms, &c.
16. Department of History and Political Science: Fourteen lecture-rooms, gallery of geographical maps, &c.
17. Department of Ancient and Modern Languages: Fifty-four lecture-rooms.
18. Department of Mathematics: Fifteen lecture-rooms and model-room.
19. Department of Physics: Ten lecture-rooms, thirty-one laboratories, with necessary adjuncts, tower for vertical experiments, long gallery for optical experiments, machine-shop, &c.
20. Department of Astronomy: Observatories for astronomy and meteorology, six lecture-rooms, dwellings for three astronomers and families.
21. Department of Chemistry: Three lecture rooms, thirty-one laboratories, and a long list of accessory departments.
22. Department of Natural History: Ten lecture rooms, various laboratories and their accessories, dissecting-rooms, vivisection-rooms, large museum of zoological collections in three sections, microscopical laboratories, herbarium, botanical garden, &c.
23. Department of Fine Arts: Providing everything for the teaching of the Fine Arts; painting, sculpture, architecture, music.
24. Department of Agriculture: Seven lecture-rooms, many laboratories; museum for agricultural products, &c.
25. Department of Mechanical Engineering: This department includes electrical engineering. Eight lecture-rooms; eighteen laboratories; five drawing-rooms; three or four workshops; rooms for collections and models, &c.
26. Department of Civil Engineering: Accommodation similar to last department.
27. Department of Mining: Similar to No. 25; space and accommodations required for this department are about the same as for the Department of Mechanical Engineering; power supplied from central station.
28. Department of Draughting and Graphical Analysis: Nine draughting-rooms, model-room, &c.

Bearing in mind that in the above statement of the requirements for the various blocks we have only given the principal items, and omitted a great quantity of minor detail, it will readily be seen that this is a scheme which no man can adequately consider and sketch out plans for, even on the small scale demanded, between now and July 1, unless he put aside everything else that he was doing and devoted his whole time and thought to this one competition; and is it likely that any man who has a practice and has his living to make by it will abandon all his regular work for the sake of the chances offered to him here? The only people who are likely to go in for it are ambitious young men who have not got into practice, and who have enough to live on to support them while they are engaged in working out the California scheme; so, at least, the probability appears to us; and we do not suppose it was that class of architect which the promoters desired to attract. The promoters, in fact, seem to have been a little bitten with that disease of *megalomania* which is said by Nordau to be a special weakness of the present day; they have desired to have an architectural competition on such a scale as should throw all others into the shade; and they have gone beyond the limits of what it is possible to expect from competitors. They should have asked for a block plan of the site, with a sketch elevation and section, and detailed plans of perhaps two of the blocks, as an indication of the author's efficiency in the details of planning. With such a programme they might have attracted some of the most eminent architects from all countries. As it is, we very much doubt whether they will attract any such men. There may be still time to reconsider the matter and to announce such a modification of the conditions as we have suggested, through the Press, in such a manner that it should come under the eye of all actual or possible competitors; and the Trustees or their professional advisers would probably do well to take this point into consideration before it is too late, if they wish the competition to be a success.

LONDON SOILS AND SUB-SOILS.

ONE of the most useful works that has ever emanated from the Geological Survey Office has just been published.* It treats, in an elementary way, of the general character of the ground in London and for some miles round from a sanitary standpoint, and is intended to be useful to house-hunters, medical officers, engineers, and architects.

Mr. Horace Woodward thus classifies the various geological formations and soils, and tabulates their leading characteristics:—

QUATERNARY.	
Made ground and natural soil ..	= Superficial covering of *mould* and disturbed ground.
Alluvium	= Silt, marl, clay, and peat.
Valley or river gravel and brickearth	= Gravel and loam.
Clay, with flints (of varying age) ..	= Clay, loam, and flints.
Glacial drift	= Boulder clay, loam, gravel, and sand.
TERTIARY.	
Bagshot beds: Upper	= Sand.
Bagshot beds: Middle	= Sand, loam, and clay.
Bagshot beds: Lower	= Sand.
London clay	= Clay.
Blackheath (or Oldhaven) beds ..	= Gravel.
Woolwich and Reading beds ..	= Clay, sand, and gravel.
Thanet beds	= Sand.

The "made ground" is, naturally, thick in those parts of the Metropolitan area which have been longest settled upon. At the Bank of England, for instance, it is 22 ft. in thickness; it "is not always an unsatisfactory foundation for a house."

Dealing with the "marshland, or alluvium," the author rightly condemns it for building upon; composed of silt and clay, with peat and occasional layers of marl or gravel, and varying in thickness from 5 ft. to 40 ft., it forms a damp and unreliable foundation. Gravel usually underlies the alluvium, and this is often waterlogged, so that, if the river be in flood, and the alluvium be thin or porous, water may rise in the cellars of houses built upon such low-lying ground. The useful map accompanying the work indicates that alluvium occurs as a broad sheet in the valley of the Thames extending from Bermondsey to Gravesend, but is cut out at Woolwich, Erith, Purfleet, and at Gravesend itself. Most of this silt and mud is on the northern side of the river, though there is a considerable stretch of it on the south side, at Plumstead marshes and Erith marshes. The alluvium extends as a narrow strip up the Thames from Bermondsey to Chelsea, and a great part of Westminster is situated on old marshland. The valley of the Lea for many miles is skirted by the same undesirable formation, and so is the Colne valley from Staines, by Uxbridge, to

* "Soils and Sub-Soils, from a Sanitary Point of View; with especial reference to London and its neighbourhood." By Horace B. Woodward, F.R.S. London: Her Majesty's Stationery Office, 1897. (Memoirs of the Geological Survey.)

Rickmansworth and Watford. The author seems a little contradictory in stating that one of the most serious objections to any large population on alluvial grounds is the difficulty of introducing any effective system of house-drainage, owing to the want of fall to carry away the sewage. How about immense parts of the Metropolis built in such situations? Are they not effectively drained, and was any great difficulty experienced in draining them more than is experienced in draining other large cities built on low-lying land, though not on alluvium? Does not the objection raised apply to low-lying land in general, and not to alluvium in particular?

Turning to the next deposit scheduled, the "valley or river gravel," this formation consists of loam as well as gravel, and extends over many square miles to the east, west, and south-west of the Metropolis, besides occupying the central area. It is, in fact, the formation best known to the Londoner, and for the most part lies on the London clay in the area under discussion. Chiswick, Barnes, Hampton, Staines, Twickenham, Mitcham, Fulham, Hammersmith, the City, Hackney, Homerton, West Ham, Dagenham, Tottenham, Edmonton, and Waltham Cross are amongst the districts for the most part built on the "valley gravel." It occurs at low levels near the rivers, and extends to considerable elevation in parts, being 150 ft. above O.D. at Highbury, about 160 ft. at Castlebar, Ealing, and 180 ft. at Wimbledon. Speaking generally, this gravel includes some of the best residential sites in London and vicinity; it attracted the attention of the early settlers, as was long ago pointed out by the late Sir Joseph Prestwich, though the question of water supply probably weighed more with them than any other consideration, the water being obtained then from these gravels. Although Mr. Woodward is favourably inclined towards these gravels from a sanitary standpoint, and in this we quite concur, he issues a note of warning concerning that part of them situated at low levels, unless in such situations the gravel is very thick. When thin, the gravel in the broad low-lying areas is often full of water, and the basements of houses are apt to become damp. We would go further than this, and state that such thin gravels (and, rarely, in places where they are moderately thick) are sometimes impregnated with the remains of sewage and other filth, and are not, under the circumstances, choice spots to build upon. Another factor in the case, which seems important to us from the point of view of health, is that where the thin gravels are waterlogged, not only do the basements of houses tend to be damp, but the atmosphere over the district becomes unduly charged with moisture at times when in other districts it is comparatively dry—the moisture will "hang about" longer over these thin-gravel areas, especially when the bed rests on such an impervious formation as the London Clay. The observations in the last sentence, however, do not apply so much to that part of London which is well drained, and where the rain is to a large extent prevented from soaking into the gravel, but to the outlying suburbs, where the residents must, in consequence, be more careful in selecting a site to dwell upon.

The "brickearth or loam" occurs in small patches in the valley of the Lea at Enfield Highway and near Ponders End, also at Stoke Newington, Great Ilford, Upminster, and near Erith. Two or three occur in parts of Battersea and Chelsea; but large tracts extend from Kensington to Brentford, and again near Hayes and West Drayton, whilst to the north of Shepperton is an ovoid tract some two miles in length. When not too argillaceous these loams are healthy enough sites to build upon.

The "Gravel of Higher Grounds" is found chiefly north of the Thames, and some distance from the City. The greatest development in the area included within the scope of this work is on the other side of the river Colne, from Beaconsfield to Iver, and by Chalfont St. Peters to Rickmansworth, north-east to Aldenham and North Mimms. Several pieces, are, however, found nearer London, as at Hendon, Hornsey, and Barnet. These gravels vary in thickness from 25 ft. to 50 ft., and range from pebble-gravel or shingle, largely made up of flint and small quartz pebbles, to coarser sub-angular gravel and sand containing, in addition to flint and quartz, many pebbles of quartzite and other stones. So far as the sub-soil is concerned these areas may be highly commended; they are pleasantly situated and picturesque, and it is only where they descend to lower grounds, such as those bordering the Colne valley, that the sites would be liable to damp.

The "Blackheath" beds, being composed of open gravel, and usually situated on the higher grounds of Kent, in the neighbourhood of Woolwich, Greenwich, Bromley, &c., afford excellent foundations on very healthy spots.

The "Bagshot" beds are very local in distribution, but occupy a considerable area beyond Chertsey to the south-west. The "middle Bagshot," is more argillaceous and loamy than the "upper" and "lower," and consequently does not furnish such good sites. A very detailed geological map is necessary to enable one to detect these little differences in this formation.

The "Thanet" sands and "Upper Greensand" form dry tracts south of the Thames; the former extending along North Kent to Epsom and beyond, passing by St. Mary Cray and Croydon; the latter further south as a thin band of little consequence, following the outcrop of the chalk from Otford, near Sevenoaks, to near Guildford. Everywhere they furnish dry and healthy sites for houses.

The "Lower Greensand" is more important as a residential area in Surrey and Kent, extending as a broad belt from Reigate to Sevenoaks and beyond. The formation consists of loose sands, consolidated here and there into hard bands, and varies in thickness from 250 ft. to 400 ft. It occurs below the high scarp of the North Downs. It is famous for its dry and healthy soil and salubrious air. The only drawbacks in the Lower Greensand areas are the proximity of the Gault Clay and the Atherfield Clay, and sites should be selected as far away from the outcrop of these as possible—at least, that is our view.

The "Woolwich and Reading" series and the "Clay-with-Flints and Loam" form mixed soils about which it is not possible to give much definite information. They vary in character according to the precise locality. The Woolwich and Reading are extensively developed in the neighbourhood of Greenwich, Woolwich, Bromley, Croydon, Orpington, and to the east near Swanscomb and Gravesend. Here a gravel, there sand, occasionally loam, and sometimes pure clay, it is impossible to map the innumerable variations in short distances, and nothing short of actual investigation on a selected site can determine the precise nature of the beds. In regard to the "Clay-with-Flints and Loam," these are irregularly distributed over the chalk downs running east and west from Caterham, and occupying considerable areas. Such ground is doubtful, although Mr. Horace Woodward tells us that, generally speaking, it may be regarded as dry and healthy. This, however, is only because the clay is in an elevated position, and breezes help to dispel the moisture which would otherwise accumulate. We may point out that this is all very well when the "Clay-with-Fints" is near the edge of the chalk escarpment; but when some miles away from it the breezes are expended and the situations, as we know from experience, are by no means as "dry and healthy" as the author would have us believe.

The author says very little about the clays of the neighbourhood of the metropolis; the London clay which underlies the superficial Quarternary beds is a stiff brown clay at the surface, and becomes blue on being dug into. It retains moisture for a great length of time, but is much to be preferred to thin beds of gravel on clay, from a hygienic point of view. At the same time, the author does not mention the disadvantages accruing from instability of foundation, not even in that section, "Clay and Gravel Sub-soils," in the chapter on "The Sub-soil, with reference to Sites and Foundations for Houses," though a word or two is said (p. 30) concerning buildings on the brows of clay slopes. The expansion and contraction of the clay during wet and dry weather respectively has the effect of causing ugly cracks in the walls of many buildings, even those built in a substantial manner.

The "Boulder Clay" is better from the point of view of secure foundations, but agrees with ordinary clay in affording damp situations unless on breezy heights and in the presence of good drainage. We need not deal with "Gault" and "Weald Clay," which present practically the same features from the sanitary standpoint as the London Clay.

We quite agree with the author that the Chalk, with the exception of its lowermost portions, forms nearly everywhere a dry, healthy surface, as rain sinks readily into the ground. It constitutes admirable sites for building, though but little use for garden and plantation purposes.

The chapter on "Water Supply and Drainage" is an old tale, and contains nothing new so far as we can see; the remainder of the book deals with the meteorological aspects of the surroundings of a house, and with sites for cemeteries—a fitting subject for the conclusion.

Speaking generally, we must caution the reader against putting too much reliance on the coloured map attached to this book. The author has, of necessity, had to draw very largely from other publications for his information, and the map is only a geological map in disguise. And a geological formation is rather identified by its organic remains than by lithological characters—the essential characters from the hygienic aspect. When we see the formations denoting "sands, pebble-beds, and clays" blocked in

by one tint (*e.g.*, Blackheath, Woolwich Reading, and Thanet beds), and "sand and pebble beds with clay and loam" (Bagshot beds) by another, and so on, we begin to understand that although the tinting in this map is not that usually adopted by the Geological Survey, yet, rightly understood, we may get the same information from a "Drift Map" of the Survey, published some years ago.

Nevertheless, we will not attempt to sound a discordant note, for, as we said at the beginning, this is a good and useful book; it is intended for the public, and the Geological Survey will find that the more publications of a similar character they issue from Jermyn-street, the more willingly will an indulgent public grant the pittance the Survey receives from the Treasury, a pittance even that has been hanging in the balance lately, unless we are mistaken. We congratulate Mr. Woodward on his book, and the Director-General on the change of policy—one that has been advocated in the *Builder* for some years past.

NOTES.

Excavations at Delphi.

THE last issue of the "Bulletin de Correspondance Hellénique" (January, 1898), contains the long-looked-for plans of the precinct of Apollo at Delphi, the excavation of which is now completed. As we propose to reproduce the plan, and discuss it in full in a later number, we will now only draw attention to its appearance. The preliminary plan we published, June 8, 1895, is now completed, and, indeed, superseded. The entire precinct covers an area of 20,000 mètres (between four and five acres); the complete circuit of the peribolos wall is made out, its masonry in some parts in fairly good preservation. Since our notice nearly three years ago not only has the temple been cleared out, but the great altar at its east front has been laid bare, and not far from it a large omphalos, covered with fillets in marble, has come to light. The complete course of the Sacred Way is made out, and many a vexed question of topography settled for ever. With Pausanias in hand it is possible now to make out the main outline, and follow many of the details of his description. The work of the French excavators is, however, not yet complete. The outlying parts of the city of Delphi still remain to be examined—the portion round the fountain of Castalia, the Gymnasium, the Temenos of Athene Pronaia, the Synedrion of the Amphictyons, and the suburb of Pylaia, all offer promising fields, and all will be the object of at least tentative exploration.

Versailles.

THE Commission des Monuments Historiques has been visiting in detail the work carried out at the Palace of Versailles and the Trianon, under the direction of M. Marcel Lambert. The Commission seem to have come to the conclusion that the architect has made it his aim to restore the existing constructions in the style of their period and "en s'inspirant des meilleurs documents"; words which suggest the conclusion that a great deal more of "restoration," in the wrong sense of the word, has been going on at Versailles than people in this country were aware of. It has been thought necessary to pull down some subsidiary buildings which were in a state that threatened collapse, but we are assured that in rebuilding them as much as possible of the old material has been utilised. Further repairs are still necessary to the attics of the two wings and the large galleries of the first floor suite. It is desired, we are told, to have everything complete by the year 1900, in order to present visitors, we presume, with a spick-and-span new Versailles at the exhibition year. Mr. Fulleylove and other artists who rejoice in painting old buildings had better get all they can out of Versailles before it is polished out of recognition.

Open Spaces.

THE Board of Agriculture have drawn up and issued a scheme, pursuant to the Metropolitan Commons Acts, 1866-78, respecting Harrow Weald Common. The common is to be regulated and managed by a body of Conservators who are charged with its preservation, drainage, planting, and the like, and who will frame a set of by-laws to prevent nuisances, encroachment, ill-usage, or undue interference with public use for purposes of recreation and exercise. The Metropolitan Public Gardens Association are making improvements at St. Nicholas churchyard, Deptford, and the Jewish burial ground in the Fulham-road, at the corner of Church-street. The last-named has served for the Westminster congregation of Jews, and an inscription in Hebrew and English, set over the entrance, states it was established in 1816. Just opposite stood, until 1848, the Queen's Elm turnpike, named, it is said, after a tree beneath which Queen Elizabeth took shelter from a shower when walking with Lord Burleigh, who lived at Brompton Hall. The tradition may have some substance in fact, inasmuch as "the Queen's tree at the end of the Duke's-walk," by this spot, is mentioned in the Chelsea parish records, 1586, and in 1687 the highway surveyors are amerced five pounds for not sufficiently mending the highway from the Queen Elm to the bridge, and from the Elm to Church-lane. The cross-roads were afterwards known as "Nine Elms" from the trees planted by one Bostocke around the older one; Elm Park-gardens, about 200 yards distant, have been laid out over the site of Chelsea Park (once the property of Sir Thomas More and of the Marquis of Wharton), where, *circa* 1720, John Appletree established a mulberry garden for rearing silkworms. The Association are engaged in laying-out York-street, Walworth, disused burial ground, and in renovating that of St. George-the-Martyr, Southwark, and, we understand, will shortly proceed likewise with St. John's churchyard, Hoxton, together with Charles-square, Hoxton, and Albion-square, Dalston. We read also that the London County Council propose to acquire for 6,000*l.* a plot of 1½ acres in Grace-street, Bromley, E., and agree to take over and maintain Spitalfields churchyard, as laid out by the Association six or seven years ago.

A Patent Court.

A CORRESPONDENT of the *Times* who signed himself "Practitioner" has suggested that in order to prevent the trial of actions in regard to patents from blocking the way for general litigation in the Chancery Courts, there should be established a court for the trial of patent cases only, in other words, that a judge should be appointed for the purpose. We have more than once urged the same view, not for the purpose of lightening the general cause lists, but because it is perfectly obvious that it would be more satisfactory that patent actions should be set down before one judge, who would be thoroughly accustomed to this character of litigation. Further, he should have the assistance of an assessor or assessors, so that a great deal of the expensive and elaborate evidence of experts which is now employed, to educate the judge in his subject, so to say, could be dispensed with. There must always be a certain amount of expert evidence, but under the present system it is too extensive and too costly. We should be inclined, also, to say that actions for the infringement of light and air might very well be assigned to the same judge. The more litigation is classified and systematised the easier does the judicial machine run, and the greater is the convenience to suitors and all interested in law suits.

Palladium Plated Reflectors.

THE paper read on Wednesday to the Institution of Electrical Engineers by Mr. Cowper-Coles, on an electrolytic process for the manufacture of parabolic reflectors for search lights and similar purposes, is interesting, as it describes an important industrial application of palladium. This metal, which has a bright silver-white colour, has hitherto only been occasionally used for coating silver articles to prevent them from tarnishing. It is an expensive metal, being at present twice as dear as platinum by weight, but bulk for bulk it is the same price. Mr. Cowper-Coles builds up his concave reflectors electrolytically, the backing being of copper silvered in front, and then a small quantity of palladium is deposited on the silver. They have been found to withstand excessive heat without tarnishing. Salt water thrown on them when hot has not damaged them, the water being driven off as steam and the salt left as a white deposit which could be easily removed by a wet cloth. A reflector recently tested at Portsmouth had a number of rifle bullets passed through it without affecting appreciably its efficiency. Mr. Cowper-Coles said that silver was quite unsuitable as a reflector for the light of the electric arc, as it rapidly tarnished, and there was a consequent falling off in the intensity of the reflected beam; whilst palladium, although not quite such a good reflector as polished silver, was very suitable, as it was practically unaffected by the heat of the arc and by exposure to the atmosphere. A photograph of the image of a wire grating in one of his reflectors showed hardly any distortion of the wires, and proved the true parabolic nature of its surface.

Sanitary Work at Paddington.

THE case of Barnes *v.* Scantlebury, which was tried last week, reveals a state of affairs at Paddington in regard to sanitary matters which is most unsatisfactory. It appears that the owner of a house agreed to do certain sanitary work for a tenant. The agents for his property were Messrs. Hunter and Hunter, one of whom was a member of the Paddington Vestry. These agents employed a builder who was also a member of the Vestry, and the son of this builder was the Sanitary Inspector of the district. As Mr. Justice Wright said, "such a state of things was a reproach to the whole

system of local government, and was calculated to lead to abuses and scandals." As regards the case itself, the defendant admitted that the work was not properly done, though it had been passed by the sanitary inspector. It is clear that a sanitary inspector of a district ought not to be a relative of any builder or contractor in his district. He should be a person selected from another part of London, or from outside the Metropolis altogether. We also are of opinion that no contractor or builder who is a member of a vestry should be allowed to take contracts for work which has to be executed to the satisfaction of an officer of this vestry. It is clear that otherwise the official cannot bring to bear the unbiassed mind which is desirable. If a builder wishes to take part in the business of a vestry he should be content to do work which has in no way to be approved by the body of which he is a member.

Sanitary State of Wadebridge.

IN Dr. G. S. Buchanan's report to the Local Government Board upon the causes of an outbreak of enteric fever at Wadebridge, in the Rural District of St. Columb Major, Wadebridge, is described as "a little town commercially well to do, and promising to grow in the future owing to increased facilities of railway communication," but in a very unsatisfactory state as to buildings, drainage, and water supply. All but a few newly-built houses are without damp-proof course, and many are damp in consequence. The old so-called "sewer" leading directly to the river, locally termed a "stone sewer," is a mere channel below the surface of the roadway, the floor being earth or rock, ths sides three or four courses of stone, apparently put together without mortar, cement, or concrete, while large flat stones form its roof. Other "sewers" of similar construction are to be found elsewhere in the town, but their position is usually quite uncertain. The soil pipes of the few water-closets in the place are believed to be led to neighbouring drains, which discharge their contents into one or other of the "stone sewers." The majority of the dwellings are served by privies in their yards or gardens. There is no system of public scavenging, and no bye-laws imposing upon householders the duty of periodically removing excrement and refuse. Frequently they deposit it by a neighbouring road-side, and thus nuisance arises. The water supply of the town is derived from wells, said to be sunk usually 20 ft. to 30 ft. in the rock. "Craig's Well," one of the five public wells, has a depth of 25 ft. For a few feet below the ground level it has a steining consisting of courses of stone, not cemented together, and permitting leakage into the well from the surrounding soil; the remainder of the well-shaft has no steining, the wall of the well being formed by the rock of the place. These wells furnish an uncertain quantity of water, and from the general statement as to the methods of drainage, &c., above referred to, it is not difficult to understand, as Dr. Buchanan observes, that the wells are "exposed to numerous risks of pollution."

Cercle de l'Union Artistique.

THE exhibition of the "Cercle de l'Union Artistique," opened in Paris on Monday last, is at least equal in interest to that of the Cercle Volney. Some of the numerous portraits are of the first order, especially the remarkable one of M. Hanoteaux, the Minister of Foreign Affairs, by M. Benjamin-Constant, and that of Mdlle. Rose Caron, which is one of M. Bonnat's best works. M. Roybet continues to paint the portraits of well-known artists in sixteenth-century costumes. The portraits of young ladies by M. Aimé Morot and M. Chartran, and those of children by M. Carolus-Duran, are also among the main attractions of the exhibition. M. Detaille exhibits a picture which is a remarkable example of his special talents and historical knowledge; it represents the French outposts during the war in Italy in 1796. Among works in *genre* may be mentioned a fine picture by M. Cormon, and a "retrospective" view of the Paris quays by M. Georges Cain, the curator of the Carnavalet Museum. Among the sculpture exhibited is a terra-cotta by M. Puech, "La Fidelité enchainant l'Amour," and some works by MM. Gérôme, Crank, and Mercié.

The Society of Medallists.

THE Society of Medallists is a new organisation which is now holding its first exhibition at the Dutch Gallery, 14, Brook-street. The collection consists chiefly of medallion portraits and small bas-relief subjects on the same scale, together with some silver-point portraits and other drawings. There is perhaps no medallion work that is of the first order of interest; there are, however, some very pleasing works both in portraiture and ideal heads; among these may be specially named Mr. Drury's "My Queen," a bust in profile, Mr. McGill's "Design for a Medal and Reverse," and Miss Margaret Giles's "Two Medals." Perhaps the best thing in the room, however, is not a medal, but Mr. Legros' silver-point portrait of the Duke of Devonshire, of whom the same artist has also executed a medallion portrait, for which this drawing was perhaps a study; but the medal is hardly equal to the drawing. The exhibition, however, is a distinct addition to the smaller exhibitions of London, and it is to be hoped that it will succeed and develop further. In the art of the medallist we are far behind the level of the best French work of that type, and an impetus to the development of the art in this country is much needed.

THE ITALIAN RENAISSANCE.*

BY PROFESSOR AITCHISON, R.A.

THE misfortune of the Renaissance architects was that they could not make their architecture progressive, and we may well ask how it could be expected. They were neither architects nor constructors; they were literary men, craftsmen, and artists who sought to bring to life again deceased Roman architecture; but we owe them, as we owe the humanists, an overwhelming debt of gratitude. The humanists rescued the Greek and Roman classics for the instruction and delight of posterity. These craftsmen and artists rescued innumerable remnants of antiquity, and some at least of the classic methods; they not only gave greater beauty and perspicuity to their work, but showed how stateliness, dignity, and majesty could be impressed upon it. To sculpture, at least, they gave a new soul, and they brought painting to a perfection that then did not exist, and which has not since been surpassed. They gave, too, a sort of canon of beauty and dignity to architecture which it should strive not to fall below. Where the Renaissance artists failed was in not seeing that architecture was both a structural and a progressive art; that it had to meet new wants, both material and spiritual, and an immense accession of knowledge. They not only left a bitter drop in the cup, but that bitterness was rank poison, fortunately not mortal, but producing stupor from which we are only now beginning to awaken.

The Renaissance artists were enthusiastically patriotic and did not see why if they could equal or surpass the Romans in the visual fine arts, they might not bring back Roman power. Architecture with them had no proper basis as structural art, for as a structural art it could only progress by construction, and ignoring all the progress made by the Gothic architects they fell back on the Roman construction of a thousand years before. But, omitting these fundamental errors, we must not be ungrateful for all the masterpieces they left for our admiration and instruction. We must consider what the people were when the Renaissance began, and what it was. The people amongst whom it sprang were of exceptional vigour of mind and body, and with a belief that there was nothing they could not do, and with a desire to know and do everything, and with a genius, an energy, and an untiring perseverance that astonish us; and which we, alas! do not possess. Those of you who have read Count Baldassar Castiglione's "Courtier" see the ideal men of those days—men who excelled in every bodily exercise, who were polite, and accomplished in all the fine arts. One has never met such men in our day except, perhaps, the late Lord Leighton. Every one has heard of those great artists of the Renaissance—Alberti, 1405-72=67; Leonardo da Vinci, 1452-1515=63; Raphael, 1483-1520=37; and Michelangelo, 1475-1564=89; all but Raphael and Michelangelo were worn out with work and care just after middle age. Vasari tells us that a man studying art who was not ready to sacrifice his food and sleep could not be said to have a passion for it. The Renaissance was like a man awakening from a lethargy, and suddenly desirous of again using every power of mind and body to its fullest. At its beginning it caused a passion in the people to rival the visual fine arts of the ancient Romans, and when they had rivalled or outrivalled them, there was not much more to do in that direction; but as it was as well the striking off the fetters from men's minds and leaving them free to pursue whatever they liked, there was everything to do in other directions; all the world was again opened for the display of their energies, for their investigation, for their delight.

The mere invention of printing by movable type, supposed to have been found out in the first half of the fifteenth century, was a great epoch, as the hoarded knowledge and wisdom of the world could then be disseminated; and men's minds were then so active that they tried, not only to surpass every work of fine art that remained, but to prove and to investigate everything. In the second half of the century Columbus discovered the West Indies and South America; in the third quarter of the fifteenth century, copper-plate engraving was discovered. In short, in the fifteenth century there was a new stir in men's blood. Copernicus, born in 1473, had his doubts about the earth being the centre of the universe, and published his book on his death-bed in 1543. Galileo (1564-1642) proved that the earth was not the centre of the visible universe but merely a minute planet in the solar system. This does not seem of great moment to us, but the clergy saw how momentous it was to them, and foolishly tried to stop the promulgation of an ascertained fact. Man's earth sank from being the centre of the visual universe to be an insignificant satellite of the sun, and therefore man as its inhabitant also sank in a proportionate degree. The finest intellects then became more eager to explore nature and discover her laws than to distinguish themselves by carving lovely statues, painting beautiful pictures, or by building charming or impressive buildings. Alberti had written a Latin play so well that he passed it off on scholars for an ancient one. Michelangelo had carved a statue that the best judges mistook for an antique one. Palladio boasted that his Basilica was equal to anything the Romans had done, and there were several painters who were the first in the world.

Besides the first architectural Renaissance at Florence, which mainly proceeded from the Florentine masters, there was another Renaissance at Venice, mostly by Lombard masters, or from those of the Alps of Bergamo, and

* Being the second Royal Academy lecture on Architecture this Session. Delivered on Thursday afternoon, February 3.

their Renaissance buildings have a much stronger flavour of Byzantine than those at Florence. There was a whole family of the Lombardi who, like the du Cerceaus of France, have been so greatly mixed up that it is difficult to say to which of them to attribute the buildings. The Cavaliere G. Boni, who lived so many years in Venice, is descended from the family of the Bons who built the Gothic part of the Ducal Palace, the Porta della Carta, and the Ca' d'Oro : he has at least settled the name and date of one of them, Pietro Lombardo, who built the church of Madonna dei Miracoli. The corner stone was laid in 1481, and it was finished about the end of 1489. Its exterior is simple and charming, particularly the turret and choir, and its interior is most beautifully designed and carved ; a book of photographs, with an introduction by Cavaliere G. Boni, is in the Institute library. The outside consists of two stories. The entrance front has a podium that breaks round the bases of the six panelled Renaissance pilasters which support an entablature, and in the middle bay is the doorway. This is marked by a projection and by arabesques in the panels of the pilaster outside the door case. The doorway is crowned with a segmental pediment, the fillet of whose cornice turns up at each end, and is formed into a circular patera. The lunette contains Madonna and Child, with a tablet inscribed "Pyrgoteles," the name assumed by the sculptor Zuane Zorzi. On the first floor above the ground floor cornice is another podium on which stand six Ionic partly-fluted pilasters, supporting four semicircular arches at the sides and an elliptical one over the doorway. All five nearly touch the soffit of the upper entablature, whose frieze is ornamented with roundels of porphyry, with carved arabesques between, and is crowned with a cantilever cornice ; the pediment is semicircular, there is a rosette at each angle and two on the top, on which stand figures, and in the lunette of the pediment is one central circular window and three small ones on its vertical and horizontal diameters, alternating with circles of inlaid work. The whole of the fronts are of marble, panelled by rails and stiles of darker marble, and with inlays of porphyry, and in the spandrels of the upper arches of the entrance front and of the flank are half-length figures in bas-relief. The simplicity of the composition and the admirable grouping of the choir with its dome and turret, the beautiful colour of the weather-stained marble, and the admirable execution of the sculpture, renders this Renaissance church one of the gems of Venice.

The plan of the church is simple. It has a nave with a gallery over the entrance for the nuns. At the choir end the floor is raised and reached by a flight of fourteen steps, like the Basilicas of St. Miniato at Florence and St. Lorenzo outside the walls of Rome, only here the single staircase is in the middle, while in the two former there is one on each side. The raised part is protected by a balustrade in front and on either side of the staircase, and from the front balustrade the ambos project, nestling against the walls of the nave ; beneath the ambos are doorways, at the level of the nave, to the sacristry. On the upper floor, where the choir recedes, is a step ; the altar is surrounded with a wall with pierced panels. Over the nave is a semicircular wooden ceiling carved and panelled ; the carving is gilt on a blue ground, and some of the larger panels hold pictures. The choir is domed on pendentives. The whole of the walls of the church are lined with marble inlaid or carved ; the scrolls, arabesques, and capitals are of pure Roman design, with griffins, chimeras, and dolphins superbly carved, and the pierced marble panels of the enclosure to the altar are marvellous. The plinths of the pedestals of the pilasters that mark the entrance to choir and support the bit of entablature and the archivolt, are some distance above the floor and are carved with children or Cupids riding on the tails of mermaids. The whole, as far as the design of the ornament is concerned, reintroduces Roman symbolism, though doubtless the dolphins and tridents point to the Venetian power at sea. The Roman eagle is repeatedly introduced, while flying cherubs have been caught by their hair getting entangled in the scrolls. In one of the friezes even bullock-skulls are introduced, and goat-footed satyrs dance on a patera supported by a half-length nude figure springing from foliage. The interior is unique and superb.

It seems to me that it will be better to follow the early Venetian Renaissance, which, though much later than the Florentine, is to me earlier in sentiment, than to mix up the whole into one inextricable muddle. It is by no means certain that the early Venetian Renaissance got much of its inspiration from Florence, though it is impossible to say it did not. At any rate, we may say that the Renaissance was in the air. At Venice, too, the early architects seem to have been sculptors.

I do not know if the Palazzo Dario was the first example. It is, of course, attributed to one of the Lombardi. It has the simplicity and the artistic sentiment we all so much admire, but with traces of Byzantine influence, and I do not think there is a straight line in it, either vertically or horizontally. Its front is wholly of marble. The circular-headed entrance doorway is about the centre of the ground floor, and in the middle of each side there is a circular-headed window in an oblong panel ; the arches are supported by pilasters, with large roundels of marble or porphyry in deep ornamented frames on each side of the windows. At the left angle, looking at it, is a Doric pilaster supporting a shallow entablature. Over the lower entablature is a sort of panelled podium, with seven roundels, one in the middle of each panel ; to the left there are four arched windows springing from columns and pilasters, the fourth being over the doorway ; and one window in the right corner, which is repeated on the flank, leaving a wide piece of wall, in the centre of which is a large roundel with twelve smaller roundels in a guilloche as a border, and this is practically repeated in the two upper stories. The palace is capped by a modillion cornice supporting a tiled roof. The only other feature when I first saw it was a balcony on cantilevers on the second floor, with wrought-iron petticoat balusters. This palace was possibly one of those that Philip de Comines noticed as being adorned with great pieces of porphyry.

The front of the Scuola di San Marco next the Piazza is about 90 ft. long, the portion next the canal is about 50 ft. long ; horizontally it is divided by pilasters into six divisions, the two doors being in the centre of the second division from each end ; the space allotted to the grand doorway is about seven-fifths of its side space, while at the other end the space allotted to the doorway is about eleven-twelfths of the side spaces ; vertically it is divided into two heights by the entablatures, but looking at it the left or canal end has a tall blank attic, with a semicircular pediment, flanked by two side structures, about half the height of the middle one, with semicircular heads. The right-hand part of the front has three semicircular gables only, above the crowning entablature. On the ground floor there are no openings but the two doors ; on the first floor there are two windows on either side of the door canopy, and the space over the door canopy is blank ; in the right portion there are two narrow windows with triangular pediments on each side of the door space, which is also blank, but has a carved lion's head in a circular medallion, with four circular porphyry plaques on its axes. On the ground floor all the spaces between the pilasters not occupied by doorways have architectural perspectives in low relief. The superb canopied doorway is unique in its perfection. The canopy runs up into the blank space over the doorway, whose plainness contrasts so well with the richness of the canopy, with its fringed edge and finial of Madonna and Child. This canopy covers a lunette, in which is a bas-relief of a saint surrounded by monks, having his hand kissed by one of them ; this, with an arabesqued frieze and the carved capitals, forms a rich feature, well contrasted by the plain marble shafts of the columns, while the richness of the upper part is echoed at the bottom by the carved drums of the columns and the carved pedestals. I fear I should only weary you if I pointed out all the æsthetic devices of this front. The design may be said to be full of faults. The large windows are not altogether happy in proportion, and those at the other end are pinched ; the making a second band between the capitals deeper than the frieze is more or less a mistake ; and the small doorway is squat ; but the whole front is so original, so striking, and so full of artistic graces that perhaps for its size it is the best bit of Early Renaissance architecture in Italy. The front is not so faultless as the great Communal Palace at Brescia, but it is much more original and less dull, and has infinitely more artistic devices of composition. We can only compare it with Bramante's end of Sta. Maria delle Grazie at Milan, and Bramante had many advantages in the shape and size of his church that the other artist had not.

Most of the Venetian palaces had the centre on the first floor kept as a long gallery for walking in, called *la camminata*, mostly with light at each end, the side portions being devoted to the living rooms, and the palace was mostly finished by a cornice, on the top of which was the tiled roof ; the front was mostly flat, so that there was a difficulty in getting any variety of shape. This has been got over very admirably in the Cornaro-Spinelli Palace by variety in the shapes and projection of the balconies. On the first floor the *camminata* is lit by the grouping together of two doublet windows, the arches standing on columns, with a tinge of Gothic in the tracery. The side windows of the front are single doublets, divided from the centre window by piers, and with a pier at each end flanked by an angle pilaster ; the centre balcony is carried on cantilevers, and has delicate double-bellied balusters with narrow pedestals between. The two narrower balconies to the end windows are trefoil-shaped on plan. On the floor above the end balconies are straight and project on cantilevers, while the middle window has a flush balustrade, The ground floor is curiously though charmingly managed ; the central doorway is arched and enclosed in an oblong recess, with a narrow and slightly-projecting cornice over it. This floor has small rustications, and three narrow windows in oblong panels. On each side of the door two windows are on a lower level, one close to the pilaster and the other to the doorway, while just under the cantilevers of the trefoil balconies is another small window in the middle line between the lower ones, and, as you see, irregularly placed as regards the window above ; the lower windows stand on a continuous pedestal with a top and bottom torus, between which it is sculptured with rosettes and festoons. This lower story would be looked on as a terrible solecism by the later architects, who had got the Roman rules and the Roman dulness, but to those who love native originality and waywardness it is delightful, and the smallness of the windows enhance the size of the palace.

The Palazzo Manzoni is much the same as this, but larger, and, I think, a trifle later and more regular. This palace was once bought by the poet Browning.

The Vendramin Palace is immense, treated much in the same style as the two former, but the two upper stories are treated with columns, and I should think it was later than the Cornaro-Spinelli, it has neither the waywardness, the variety, nor the same delightfulness of proportion, and while the Cornaro-Spinelli has the Late Gothic pear-shaped tracery, in the Vendramin the tracery is much heavier, and the part of the spandrel below the circle is left solid and carved. Between the coupled columns marking the wings are plain medallions in a frame, one on the first floor, and a lion's head in a shell or basin on the floor above, hung from a ring by ribbons, with floating ends and a female head below it. The frieze of the crowning entablature is ornamented with eagles over the columns of the wings, with a coat of arms over the middle of the windows, and vases over the columns of the centre.

The church of San Zaccaria, attributed to Martino Lombardo and to Antonio de Mano, is one of the most striking Renaissance churches at Venice, and though it has a touch of the Middle Renaissance, there is more invention and originality about it than is commonly met with in the edifices of this period. On the ground level there are no openings except the central doorway ; the entablature is supported on two Corinthian pilasters at the doorway, and on the buttresses which it breaks round, and is carried right through the front ; over the entablature is a semicircular pediment to the door, with patera, &c., at the top and bottom, out of the junction with the line of the pediment and the patera honeysuckle springs. On the top pateræ stands a pedestal, on which is a large-sized figure of San Zaccaria. The rest of the lowest story consists of four buttresses, one on either side of the doorway, and one at each angle, and these, with the whole of the ground story, are panelled in squares ; the centre space between the buttresses has got one large panel in the centre, the angles of which run in to the side panels, and this central panel is internally surrounded by Cupids bearing festoons. The centre is divided into two panels, with shells

containing busts; the next story consists of an arcade of narrow arches, with shells in their heads. There are single blank arches on the face of each buttress, and the side spaces have similar arcades, the two central arches of which are windows. Above these is an entablature, and on the entablature, which breaks round the buttresses, coupled composite columns are supported on pedestals. The centre or nave space has a triple arcade, with four pilasters in the centres of the piers between the windows, and the same feature, but with a single arched window, is repeated over the sides. These composite columns and pilasters support a very deep entablature, and from the centre of the cornice of each angle buttress springs a quadrant of a circle, the cornice of which is carried right through the front of the nave. In this case the two buttresses are ornamented with coupled projecting piers, while there are circular recesses in the quadrants. The space in front of the nave is divided into four arcades, the two outer ones blank, the two middle ones windows; on the floor above these quadrants, and going right across the face of the nave, are coupled columns, two over each buttress below, and three pairs between them; at the back of the coupled columns is an arcade of four arches, the two centre ones forming windows, and the two outside ones being blanks. These columns also support a deep entablature, which breaks round the buttresses and has panels in the frieze. The whole is crowned by a deep semicircular entablature forming a pediment, and on the scrolls at the side, and on the top of the arch are figures, one being a figure with a cross, the other an angel, and the top one on the centre appearing to be an angel with a helmet, whose crest is turned into a weathercock. In the lunette is a circular window, deeply moulded. This front is one of the most original and striking in Venice. It has all the appearance of a new Renaissance front to a Gothic church. The whole composition is original and striking, and full of artistic devices, the top central portion standing alone with its immense central pediment, and being tied at the foot to the main body by the quadrants over the aisles. The two lower stories are kept broad by the slight projection of the panelling on the ground floor and the arcading on the first floor. The central doorway gives a good depth of shadow, and composes with the doublet windows to the aisles on the first floor, while the long vertical lines of the first floor arcading contrasts well with the square panelling beneath. The semicircular pediment of the door with its figure prevents the seven blank arcades of the nave from being monotonous. On the second floor the bright lights made by the columns contrast well with the dark windows, while the central parts of columns and windowed arcades is in striking contrast with the nearly blank space below.

The lowness of the floor above gives size to the higher floor beneath. The top story, with its coupled columns, has a certain lightness about it, while the deep shadows of the central pediments give a due weight to the top and bring the whole mass together, and the darkness of the central circular window in the lunette gives additional vigour to the top, and, with the figure of San Zaccaria, affirms the central line of the whole front. The outline is made playful by figures at the base of the quadrants and at the base and on the top of the vast semicircular pediment.

I must not omit some description of the Certosa at Pavia, which was a Gothic monastery refronted in Renaissance days. This front has generally been highly praised, but whether from the difficulties of the old front, or from the various architects employed, it is perhaps one of the worst composed buildings in Italy, although most wonderfully ornamented. The large windows of the ground floor have their lintels supported by a sort of candelabrum column, from which spring two arches, the windows have wide architraves with a deep frieze over, and a cornice and definite sculpture above, which gives the idea of a pediment. These are separated from one another by piers and buttresses with niches full of figures, and leave a wide central space for the doorway. Unhappily, the doorway, which consists of coupled columns supporting a deep entablature, and joined together by an arch with a rectangular structure upon it, has no architectural connexion with any other part of the buildings, and looks as if it had been removed from a palace and put on to the front. Just above the top of this structure and forming a cornice to the buttresses, is a flattish string course, with a solid balustrade above and the wall above that arcaded. Over the doorway is a triple window. On the story above this and over the triplets, is a large square projection, crowned with an entablature and pediment, and in the centre is a large circular window, with an enriched frame; but this also, like the door, has no connexion with any other part. On either side of this centre bay, and clear of the buttresses, is a semicircle, the archivolt of which is partly cut by the buttresses, containing in its lunette a circle which is hollowed out to admit two half-length figures; and below it is a circular-headed doublet, opening seemingly on to a loggia; beyond these, to the right and left, are walls marked with an arch, with a hemispherical niche with a bust in the lunette, and above is a pedestal bearing an enormous finial. The top story consists of three divisions; the centre one over the pediment and doorway has an arcade of five arches, and the two sides have four, and the whole is crowned by an entablature, whose frieze has cantilevers supporting the cornice above. Over the cornice is a sort of unpierced balustrade supporting the eaves of the roof. The angles of the building are flanked with two narrow towers, the top story of which has an open arch in it, and the pilasters at the sides of this opening support an entablature of Egyptian character, above which is an enormous fantastic finial. The only really attractive portion of this structure is the invention shown in its parts, and the admirable way in which these parts have been carried out. I think I ought to tell you that I have never seen the Certosa at Pavia.

I may as well say that this re-fronting of the Certosa was begun in 1491, and the architects are believed to be Ambrogio Borgognone, Giovanni Antonio Amadeo, and Angostino Busti. Above the first line of small windows the architects are said to have been Dolcibono and Christofero Solari.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE HOUSING OF THE DRAMA.

A MEETING of this Institute was held at No. 9, Conduit-street, on Monday, Mr. H. L. Florence, Vice-President, presiding.

The Secretary, Mr. W. J. Locke, announced that the sum of £30 had been given by the Architectural Union Company towards the purchase of additional books for the Library, and the Chairman proposed a vote of thanks to the donors, which was heartily agreed to.

The Royal Gold Medallist.

Mr. C. B. Fowler, the newly-elected President of the Cardiff, South Wales, and Monmouthshire Architectural Society, having been introduced to the meeting,

The Chairman said there was one evening in the year to which they looked forward with feelings of great curiosity and some degree of excitement, because of the announcement of the name which the Council had to recommend as the candidate they proposed as the recipient of the Royal Gold Medal. The name they proposed to submit to the Queen was one than which there was none more familiar to the members of the Institute. They proposed to recommend as the recipient of the Royal Gold Medal this year the name of the President, Professor Aitchison, R.A., and they did so not only on the ground that he was so well known to the architects of England, the whole Continent, and the Colonies, but also because he was the representative of that literary art and that liberal culture and knowledge in which perchance the architects of the present day were not the equals of those of some years back. As a further proof of how judicious their choice had been, he might tell them that the President's name was selected and chosen before the announcement of the latest honour which had been conferred upon him. After his name had been unanimously accepted by the Council they learned that he had been chosen to be raised to the position of full Academician of the Royal Academy. They were acquainted with the works of their President in architecture and in decoration, and many of them had been students of his at the Royal Academy and would long, as he (the speaker) did, to see all his lectures collected and printed and brought forward as a volume or volumes that they might not be the mere passing lectures of an hour, but might remain with them through the future as a guide, historical, literary, and learned, for the benefit of students, which they all were from the day they took up the study of architecture to the last day on which they practised it. Throughout their wholes lives they would feel the benefit of having studied the lectures of Professor Aitchison.

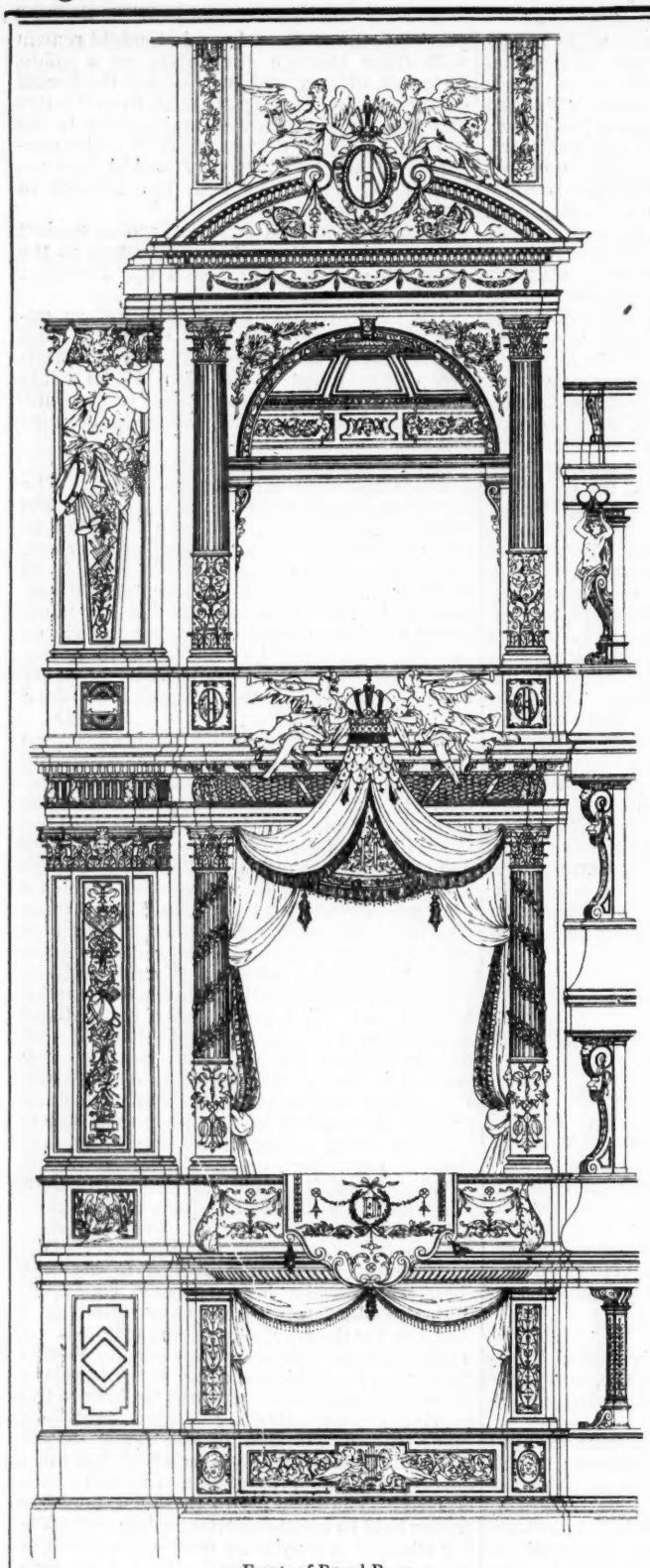
Mr. W. Woodward entered a protest against the action of the Council in nominating as the recipient of the Gold Medal the President actually in the chair at the time.

The Chairman said that it was not an unprecedented occasion and that the same thing had been done before; namely, that the President was proposed for the Gold Medal while he occupied the chair, and he duly received the Gold Medal, as, he trusted, would be done in this case.

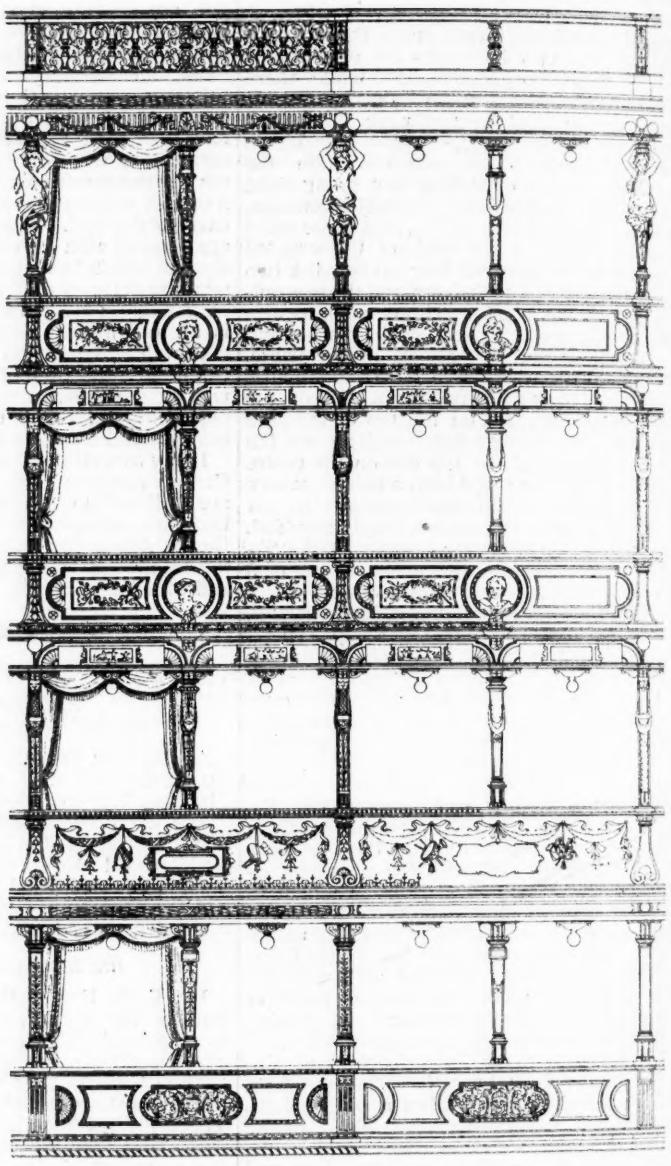
Mr. Woodward asked for the name.

The Chairman: Mr. Charles Barry. The second remark he had to make was, that it did seem to them that the year of the Jubilee, in which architecture was not specially recognised, was a most fitting occasion on which the head of their Architectural Society should be honoured. He felt convinced that the name which had been proposed was one which, on consideration, would be received with approbation, and the Institute could feel that under these circumstances the Council had done well.

Mr. Edwin O. Sachs then read a paper on "The Housing of the Drama," with special reference to subscription and endowed theatres. In his introductory remarks he explained that his contribution was framed on broad lines and did not deal with questions of construction or planning. His endeavour was to treat of some of the aspects under which a playhouse devoted to the production of drama could be constructed, not only as a temple of art, but also as the pride of the nation or community to which it belonged. These aspects, he considered, demanded the attention of the architectural and allied professions; for, without the assistance of the architect of to-day and his co-workers, the successful issue of any movement for a better class of building was almost impossible. He then explained that when speaking of the one form of entertainment under consideration—the drama—as distinct from the opera or lighter forms of amusement, it would be well to bear in mind that this included comedy and tragedy alike—the chamber play as well as grand drama—in fact, all such presentations of plays as were given with due regard to art and literature, as well as for purposes of education, with the object of dealing with serious problems or for the recreation of the cultured. A number of questions were then asked. How is the drama, in its highest sense, housed to-day? How is it housed in the metropolis, how in the provinces, how abroad? What principles guide the constitution of the home of the drama? What is the basis on which buildings devoted to the presentation of plays are erected? The answers to these questions the author held to be all-important when considering whether a playhouse fulfilled the function for which it was provided. They were also essential, he thought, if we wish to know the lines on which a modern playhouse should be built. He then showed how London had no other form of playhouse than what is termed the private theatre. However high a standard might be reached by productions associated with individual examples, these private theatres could not be considered otherwise than as having their basis in commercial enterprise. But on the Continent, what did we find? Among Latin countries in the South of Europe the private theatre was met with to a considerable extent. The private theatre was also to be found in large capitals of the Teutonic countries in Northern Europe. The private theatre which was subsidised by the State or otherwise was found in Paris and Northern Italy. The private theatre, however, was not the *typical* home of the drama for the Continent. Principally the municipal, the subscription, or endowed theatres prevailed, and also, to a certain extent, court and national theatres. Commencing with the municipal theatre, its object, he said, was generally educational and recreative, the low price of admission enabling all classes to witness the performance. Beyond the original outlay on the building, the ratepayers might either allow some annual vote towards maintenance, or they might simply guarantee to meet



Fronts of Royal Boxes.



Fronts of Public Boxes.

The Court Theatre, Vienna.

any deficit, should there be one. It was merely a question of a good stage management and the pricing of admission; for, as there were no profits to be made, the plays should practically be presented at cost price. Next, the subscription theatre was a gift presented to the town, sometimes by one or more of their wealthy citizens, at other times by a large section of the community, who voluntarily desired to participate in providing the city with a suitable playhouse, and who contributed from a few pence to some thousand pounds according to their respective circumstances. Finally, the endowed theatre was an institution for which land and building were presented, together with a sufficient sum put in trust to cover the maintenance of the block, and any reasonable deficit on the productions. It was the *bonâ fide* endowed theatre of this description that rightly ranked with some of those generous gifts of endowed picture galleries, public libraries, and artisan dwellings for which this country is distinguished. The most recent form of the subscription theatre was the "People's" Playhouse, voluntarily subscribed for by every class of the community, and conducted on co-operative lines, while a particular form of the endowed institution was the playhouse which had been provided for on philanthropic lines for the entertainment and elevation of the working classes in the same way as many of our free libraries are established. Now each of these—the municipal theatre, the subscription theatre, and the endowed theatre—was essentially a public institution. The standard of its founders was a high one, and where this was the case it followed that the conception and rendering of both interior and exterior—in other words, the architectural lines—ought to attain an equally high standard. The municipal theatre practically always stood as a monument to the prosperity and culture of a locality, and the architecture of the subscription theatre was intended to give a similar impression. National, government, and court theatres were primarily luxuries, not so much intended to afford suitable homes for the drama as to serve as places of entertainment and ceremony for monarchs or State officials. Being the outcome of luxury, however, these buildings frequently became veritable places of luxury, for nowhere was the play more sumptuously housed than in these establishments. The lecturer then spoke of the circumstances which governed the design of a theatre, and he explained how in the private theatre we had only a problem of economy to solve, and the only regard that had to be given to the architectural rendering was whether the individual holder or lessee considered that his audience required a little more gilt, a little more York stone, art in its best meaning, a semblance of art, or the gaudy treatment of an advertisement. A few managers, though risking their money, thought of the suitable housing of the drama, independently of the absolute restrictions of *l. s. d.* Sir Henry Irving was an exception when he first put the old Lyceum in order in 1878. As a rule the architectural merit of the playhouse was considered a matter of minor importance, as long as there was the customary supply of velvet and gilding in the auditorium. The London manager and his provincial colleague had only to cater for the pleasure of a sensation-seeker practically devoid of any feeling for architecture, and with little reverence for dramatic art. The British public cared very little for architecture. It was otherwise outside our isles. With a genuine reverence for dramatic art, there was also a genuine interest in architectural work,

Decorations, Municipal Theatre, Zurich.

with the result that the play mostly found a worthy home amid appropriate and dignified surroundings. The lecturer, in connexion with the question of design, touched on the theatre architect, and explained how the London playhouse was generally placed in the hands of architects who were merely good planners, good constructors, and business men, with a qualification of being able to provide for a maximum audience at a minimum outlay. With but few exceptions, it was of little importance if the so-called theatrical architect had the true feeling of art, if he could only secure the latest trick of the plaster manufacturer to catch popular taste. What counted more than any repute for architectural design was, that the architect should have the talents and facilities of a financial agent, and be able to find money for the enterprise. Now, abroad, the architect of a playhouse had to be an architect in the very highest sense of the term; and this was as it should be, for the building of a suitable home for the drama was one of the most difficult tasks that an architect could undertake, and called for a man endowed with the true spirit of the architectural vocation. The modern theatre demanded the largest share of real beauty, and the most careful blending of architecture, sculpture, and panting, whilst the complicated practical requirements were at the same time hostile to all his efforts at perfection in design. According to the lecturer, there was, in fact, no class of architectural work which puts forward more numerous, complex and essentially technical demands, and requires at the same time that the rendering shall not fall below the highest standard of taste, than that of the theatre. Views and drawings of a large number of theatres were shown. The collection embraced playhouses from all parts of Europe, including Russia, Scandinavia, Roumania, and other countries not popularly associated with the drama. The great superiority of design in the Court, national, municipal, and subscription theatres was indicated, particular emphasis being laid on the fact that of our own playhouses the Shakespeare Memorial is one of the few exceptions where considerable architectural merit was observable, and this was practically an instance of a subscription theatre. In conclusion, the lecturer recapitulated the various examples and the different kinds of institutions, arguing how apparent it was that we could not expect from the private theatre what the other classes of structure gave us. The lecturer then showed how our national institutions were such as to make it highly improbable that we should, within reasonable time, have either a Court theatre or a State theatre; and, with the few exceptions in our most go-ahead cities in the north, he considered it unlikely that we should even soon see the municipal theatre. He then asked if it was not time to consider the question of subscription and endowed theatres seriously. Why, if we subscribed to the erection of picture galleries and the homes of other arts, could we not subcribe to the theatre? If we endowed museums and libraries, which were to aid in our education and afford us beneficial recreation, why could we not similarly endow the theatre? If we wished to erect monuments to mark the culture and prosperity of our times, why should they not take the form of playhouses? And if it was the universal desire that facilities for education should be given, why limit our gift to the collection and distribution of books, or the collection and presentation of art treasures, when words on the stage, properly spoken in suitable surroundings, produced a greater impression on the mind than any amount of book reading or the study of museums? Calling attention to the many institutions by which England had become great, he advocated that the citizen should take the initiative himself, and, either by subscription or through endowment by the wealthier members of the community, give us that high standard of playhouse which we should rightly long have had. He concluded by saying: "Surely the architect who writhes as he sees the many theatres from which every vestige of the feeling of art is absent, should help to his very utmost in any movement towards providing us with better homes for the drama—structures which should at the same time become some of the most decorative features of our cities. Failing government or municipal action, surely the subscription or the endowed theatre will lead soonest to this end. And, hence, may I conclude by urging that the architect, with his great influence among all manner of men, should advocate the subscription and endowed theatre as the only practical road at the present time towards the drama being suitably housed with due dignity and full regard to the possibilities of architectural design."

Mr. Bernard Shaw, in the course of the discussion which followed, said that his education in architecture had been very much neglected, for he was in the habit of going to places where there was not much architecture. While a large number of people regarded the theatre as such a wicked place, he was afraid the time when Mr. Sachs' suggestion could be carried out was very distant. He fully agreed with the idea of having a building which was architecturally good, for he was of the opinion the theatre gave moral ideas and culture to more people than the Church did.

Mr. William Archer said that it was easier to endow and subscribe to a picture gallery, a museum, or a library. These required very little management. But in the case of a theatre it was different. It would be very difficult to find the proper manager and the right actors for such a place. He did not like the idea of running a subscription theatre on Shakespeare, as was proposed. He did not think that such a theatre would be worthy of support. He quite agreed, however, that more beautiful places were required for the drama.

Mr. Alfred Darbyshire, Manchester, said he agreed with Mr. Sachs in all he had said with regard to the housing of the drama. But, unfortunately, he had come to two or three conclusions, and he had had some unpleasant truths forced upon him while listening to the paper. In the first place, he might have been conscious before, but he was doubly conscious now, that, in the matter of theatrical architecture, we English people were far behind those of the Continent. It was a sad reflection, but it was an undoubted fact, we could not produce in England a single architectural triumph in theatrical architecture, so far as he knew. He had also arrived at another conclusion, namely, that, under existing conditions—that was, under private enterprise or private speculation—we should never do so; we should never reach to the height of those lovely things to be seen abroad. That was a very sad thing, but it was the truth. It occurred to him the other day, while strolling through Trafalgar-square, and thinking of what true theatre architecture should be, how much could be done with the Waterloo site; or, better still, perhaps, in Park-lane at Dorchester House; but as an architect he had to turn away from both sites with a sigh, because he knew that private enterprise and private speculation never could raise money enough to achieve a result on those two sites. Therefore, he was quite in accord with what Mr. Sachs had advanced against private speculation. It was hardly necessary for him to say in that room that when an architect had to design a theatrical façade which was hemmed in by other buildings—in other words, when he had no perspective returns, when he had no open space, and he was simply cribbed, cabined, and confined, he could do nothing. Therefore, as long as our present conditions obtained, the theatrical architect would never have the chance of producing anything worthy of what was to be seen abroad. What were they to do to obviate that, or to get rid of this sad condition? Mr. Sachs had advanced two or three excellent theories. He had talked about what had been done abroad by the monarch or the court, and he had also said what governments had done and what municipalities had done. It was a very simple thing to form a conclusion as to what could be done in England on any of these lines. As to the monarch or the court that was quite out of the question. If an old king were to arise, he would be an anomaly in the coming century; he would have no chance at all and would be completely out of place. The Government could not do it, because if it erected a National Theatre, say, in the Metropolis, which would be the natural thing to do, the rest of the country would rebel at having to pay towards that Institution. It would, therefore, have to extend

its theatre work to the principal cities of the Empire, and the result would be something enormous in the expenditure of public money. Therefore the Government could not do it. We were thus driven to the different municipalities of the country. The great cities of the Empire were the centres to which they had to look to realise what Mr. Sachs had set forth in his paper. He took a pride in his native smoke-begrimed city of Manchester, and in the common sense and shrewdness of the Lancashire character; but if such a thing were broached as something like a penny in the *l.* of a tax to produce a municipal theatre in Manchester, he was afraid to think what the result would be. They could not even raise money enough to house their works of art, and a great discussion was now going on for the purpose of trying to raise money by which they could erect an art gallery worthy of their treasures. He had a circular in his hand which had been addressed by a number of enthusiasts to important citizens of Manchester. The Lord Mayor had been approached and he had been asked to take the matter up; he had kindly done so, and more than that he had arranged to take the chair at the forthcoming meeting. The circular was as follows:—"It has been proposed that a committee should be formed in Manchester for the encouragement of the representation of Shakespeare's plays and the support of dramatic art worthy of a great city. You are, therefore, invited to attend a meeting in the Lord Mayor's Parlour in the Town Hall. Mr. F. R. Benson has accepted an invitation to deliver an address on the Relation of the Drama to Civic Life." They intended gradually, if that Committee were formed, to spring the great mine of municipal endowed theatres. In reference to his old friend and their late colleague, Mr. Phipps, he was under the unfortunate conditions which obtained with regard to theatre architecture in England at the present moment; that was, being entirely under private speculation and private enterprise; but he had produced in Her Majesty's Theatre the best building that could be built under the conditions, and he (the speaker) had very great pleasure in saying, and he believed they would all agree with him, that in that theatre, under those circumstances, he had left a monumental work.

Mr. Cecil Raleigh asked what it mattered what a theatre was like outside. It really did not matter what the outside of a theatre was like, and the perfect theatre was a building in which a play could be produced to the best advantage. If the outside consisted of four square brick walls, it did not matter in the least.*

A vote of thanks to Mr. Sachs for his paper was moved by Mr. Gruning, seconded by Mr. T. Blashill, and carried by acclamation.

The Chairman announced that the next meeting would be held on the 21st inst., when Mr. J. Tavenor Perry would read a paper on "The Mediæval Campanile at Rome."

The meeting then terminated.

THE ARCHITECTURAL ASSOCIATION:

HAMPTON COURT.

AN ordinary meeting of this Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Mr. Hampden W. Pratt, President, in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected as members:—Messrs. E. S. Curram, A. H. Longhurst, P. D. Murché, H. E. Sabey, and D. Stewart.

The Chairman announced the commencement of the following lectures:—On the 16th inst., Mr. W. G. B. Lewis' lectures on "Perspective"; on the 18th, Mr. A. O. Collard's lectures on "Specifications and Estimates," Division II.; on the 22nd, Mr. Max Clarke's lectures on "Hygiene (Drainage and Water Supply)," Division II.

Mr. John Belcher then read the following paper entitled "Hampton Court Palace":—

The public buildings of this country receive scanty recognition as works of architectural merit. As a nation, we have little respect for anything outside our commercial interests, and it is not surprising that there is indifference to, or ignorance of, architecture, seeing that it is regarded by the many as a mere decorative or advertising medium. Where any historical interest envelops a public building it is visited and admired, though its architecture *per se* may fail to delight or stir emotion.

In addressing you this evening on a building like Hampton Court, I shall consider it from the architectural standpoint, and not be biassed by any sentimental regard for its ancient charms. The glamour of mediævalism is apt to tempt some to invest any ancient building with a superior architectural value. Without undue reverence for the past, we may safely allow our admiration and affections to go out to every part of Hampton Court, and we can make use of its archæological facts, to trace the architectural developments made necessary to meet advanced requirements.

Most palaces come under the category of "Public Buildings," but Hampton Court has the further distinction of being a combination of domestic and public building. It is not only a building for State purposes and ceremonies, containing a series of reception rooms, with a few Royal living rooms also, of more or less public character, but it is a palace which exemplifies both the stately magnificence which appertains to Royalty, and the domestic life peculiar to and fostered by this country.

Its beginnings may have imparted to it the homely character it still retains. Before it became a Royal palace, there was a country mansion on the site, and to this Wolsey probably added his palace. We find it spoken of as a small "Manor House on the bank of the Thames, standing in about 2,000 acres of land." It belonged after the conquest to the De St. Valery family, who in 1217 handed it over to the Knights of St. John of Jerusalem. About three hundred years later this estate, with the Manor House which has always been known as "Hampton Court," was leased for 99 years to Cardinal Wolsey, at a rent of 50*l.* a year.

From this time, its history as a palace commences, and building operations on an extensive and commendable scale were proceeded with. Our sympathies at once go out to the fortunate architect. But it is not very clear whether there was any architect, for such works were most frequently carried out by a combination of artists who worked together on traditional lines in perfect harmony—the architect, the master mason, the master carpenter, and all the several artificers keeping within the limitations of their respective crafts and thoroughly understanding the needs of each. Probably the men were accustomed to work together without drawings, much as the Hungarian gipsy bands discourse their wild music without knowing anything of musical notation. No doubt there was a leader or supervisor, whether called Surveyor of Works or Clerk of Works or (later) Architect. He was "first amongst equals."

Seventeen years later when the work was carried on by Henry VIII., there are two names mentioned in the Hampton Court bills—Henry Williams, a priest, "Surveyor of Works" at Hampton Court, who would appear to have supervised all the details, and Eustace Mascal, who was "Clerk of Accounts." The latter is sometimes spoken of as the "Clerk of the Works," and was also clerk of the works under the Cardinal for his College at Oxford, where the details are similar to those at Hampton Court. It is interesting to note that these titles are still kept up at Hampton Court—there is still the "Clerk of the Works," the "Master Mason," the "Master Carpenter," and so on. These and the traditional methods have been passed down from the sixteenth century without any break.

Mr. Law, the able historian of Hampton Court, to whom I am indebted for so many details which his patient research has brought to light, remarks that, after an examination of the carefully preserved accounts for the several works during the reign of Henry VIII., he finds that the workmen were all Englishmen. He says "Even the most delicate carvings and paintings of the roof of the Hall, which are sometimes stated to have been the work of Italians and other foreigners, are proved to have been entirely executed by men so palpably Anglo-Saxon as Michael Joiner, Richard Ridge, of London, John Wright, of South Mimms, John White, of Winchester, John Hobbs, Henry Blankston, John Hathe, Reginald Ward, of Dudley, John Spencer, of Hampton, John Reynolds, of East Moulsey, &c." This, of course, is highly satisfactory. Still, we know that both Wolsey and Henry VIII. had part in bringing about that development of architecture, which we know as the Renaissance, for they both imported Italian workmen, and they both employed them at Hampton Court on decorative work. These foreigners were not builders, but only carvers and decorators, and we can trace their influence in the work of the Englishmen. The well-known terra-cotta roundels on the gateway turrets were made by an Italian, Giovani de Majano (2*l.* 6s. 8d. each). They were similar to the terra-cotta busts used by Holbein in the Gateway at Whitehall, and like them were fixed in the turrets. This use of terra-cotta is fair and legitimate. It is obviously not a constructive material, and the early instincts of the honest builder kept it in its proper place.

Another example is in the plaque containing Wolsey's arms—also in terra-cotta. These and the roundels have well-developed Renaissance details, which were evidently not regarded as in any way incongruous by Wolsey or Henry VIII. The ceiling and frieze in "Wolsey's closet" is, like other plaster work of the period, no doubt the work of Italians. On the other hand, the great pendants of the hammer-beam roof of the Great Hall, which are Italian in character and feeling, were the work of a Londoner, Richard Ridgo, who had come under the refining influence of the Renaissance.

We will now pass through the buildings erected by these workmen under Wolsey and Henry VIII. It is not improbable that the old Manor House, which he found on the site, was incorporated by Wolsey in his new building. This would seem the more likely, as, about a year after the commencement of the work, he received the King and Queen there. And in some old prints there is represented what might be the old manor in the centre of the east front. No trace of this is left, so that the matter is one of more interest to the archæologist than the architect.

Wolsey was a man of large ideas and sumptuous taste, and the magnificence of his palace filled his countrymen and foreigners with envy. The King himself evidently coveted it, and rather prematurely took possession of it. It was evidently a palace quite up to date in its arrangements and appointments. It was natural that the plan should partake of the collegiate quadrangular form. Yet on the west front there is a new departure to be noted, for at the western entrance two projecting wings form a three-sided court, each wing, however, containing smaller internal courts. It is difficult to determine exactly how much was included in Wolsey's palace, or how it was developed by Henry VIII., but I think Wolsey may have credit for the largest share in the scheme. The regularity of the plan, and especially of the entrance and first courts, proves this. It is true that the south and east fronts are represented on old plans and prints as very irregular, but existing buildings or other needs may account for this.

Hampton Court soon became a Royal palace, and from Henry VIII. to George IV. alterations and additions were in frequent progress. Those made by Henry VIII. considerably added to its attractiveness and importance. His work consisted largely in decorating and beautifying the existing structure and in remodelling certain parts to make these suitable to the Royal requirements. He affixed the Royal Arms and added badges and heraldic devices, such as the rose, the portcullis, the *fleur de lys*, and crown on the buildings. Parapets and pinnacles were added, and the whole building "restored" quite in the modern manner. It is this treatment which increases the enjoyment of the archæologists, who are apt to look coldly upon the subsequent additions by Sir C. Wren about which no mistake can be made, and where there is nothing to argue about on the score of date.

Who was responsible for the several buildings it is fortunately not necessary for me to determine—though the facts are interesting, it is rather the *result* which concerns us here. It is impossible for me to do more than point out those parts and effects of the buildings which have struck me as worthy of attention, and I may perhaps be forgiven if I dwell rather longer and more lovingly upon the later Renaissance work than upon any other part. Indeed, if it had not been for this, I should probably not have accepted the invitation of your committee to read a paper on Hampton Court. But before addressing myself to this congenial part of my subject I must direct you

* These very frank remarks may be taken as expressive of the views of the average Englishman in regard to architecture.—ED.

attention to all that is good and excellent in the earlier work of the Tudor period.

Perhaps the first thing that strikes us is the beautiful colour effects, partly due to age and atmosphere, but partly also to deliberate design. No doubt it was convenient—but it is thus proved to be a right principle—to use local materials as far as practicable. The bricks, we are told, came from Brouxham, Taplow, and other adjacent localities. Some of the stone came from quarries in Reigate, Barrington, and similar places, but Caen stone was also used where these were unsuitable. The oak was brought in large quantities from Dorking, Holmwood, Leatherhead, Banstead, Berewood, and St. John's Wood. With regard to the external effects, the beautiful texture was obtained by the inequality of the bricks, and the use of vitrified bricks in squares and lozenges. It is this which imparts to the whole that purple tone which is so admired. I do not believe that this was done from a dislike to plain surface—that is a modern complaint—because there is no great regularity in the position of the hatching, but it is touched in, much as an architectural draughtsman might resort to a little cross hatching to suggest colour to the surface. This treatment of the surface has been carried a little further in the first court, where there is a frieze or band of lozenges regularly placed and repeated. I draw your attention to it as it occurs again in the Hall and Clock Court. This does not prove that the Hall was not the original one built by Wolsey, though it was not then the habit to reproduce and copy the original work on making additions. I am inclined to believe that Henry VIII. did not rebuild Wolsey's Hall, as has been thought, but that he merely put on a new roof or otherwise finished it. The Hall is by no means larger than many noblemen's halls which were in existence when Wolsey commenced his. Penshurst had been built in 1520 and New Hall in 1524, and Wolsey was not a man to submit to be outdone by others. Originally there had been an open lantern in the roof to let out the smoke from the wood or the fire-dogs in the centre of the floor, as seen in the older hall at Penshurst; but there is no sign of there ever having been one in the present roof. The use of chimneys, especially of shafts or terminals, was recent, and attention was drawn to this aristocratic novelty by the elaborate and varied treatment of the shafts. It is this frank treatment of a new feature or requirement which we do well to note. Instead of hiding it, or endeavouring to represent something else of an earlier date, advantage is taken of it in the design. Its purpose is recognised, while it is used as a decorative feature. Most, if not all, of these cut brick chimney terminals have had to be rebuilt, and pipes have been introduced to make them more operative. It should be remembered that they were more or less an experiment. As a picturesque feature they are so successful that they have been imitated, though not rivalled, during the Gothic revival, whereas the men of the "Later Renaissance," such as Wren, still following true principles, discarded the separated shafts for the practical reason that by grouping or combining several flues in a square mass they gained in effectiveness. It is obvious that if the flue exposed to the external air is of thin brickwork (and that cut) it will be cold and the smoke will not pass easily; whereas if the flues are grouped together and have good outside enclosing walls, like the large chimney stacks of the later work by Wren, they will be serviceable. Again, those chimney breasts and stacks, especially on the west front, illustrate how the spirit of the Renaissance was already at work in the feeling after uniformity and balance of parts. Indeed this west front becomes a "façade" by its dignified regularity, and is a new departure in domestic building. Its form is the portotype of many mansions of a later date.

We must not linger outside, but return to the "Clock Court." Here are the entrances to the Royal apartments. Opposite to the Clock Tower is the entrance to the Queen's Great Staircase. This has been disfigured by some Gothic revivalist in the reign of George II. who has somewhat needlessly affixed the date 1732 to his work. It is injurious to look at, and fortunately there is something else which instantly commands our attention. On the south side is the entrance to the King's Great Staircase, and now the wider we open our eyes the better. Here is something essentially masculine. Here we have our first taste of the Later Renaissance work. The magnificence of that colonnade in scale and proportion impresses us at once. Even Mr. Law, whose archæological sympathies are centered upon the Tudor work, and who cannot forgive Wren for removing or hiding any of it, admits that this colonnade is most creditable. It is in itself, he says, very handsome, "though out of place amidst Tudor surroundings." For my part I cannot imagine anything finer for the purpose. It tells its tale quite plainly; and without pretending to belong to the original building, it takes its proper place in its history, and brings it up to the date. I find myself speechless before it. What is it which gives it such impressive charm? We know it is 89 ft. 4 in. in length. That it is 20 ft. 6 in. in the clear inside, and the height to the top of the parapet is 27 ft. 9 in.; but these dimensions are nothing extraordinary. It is the exquisite proportion, the subtle setting out of the spaces which entrances the beholder. That trick of coupling the columns, which Wren learnt of Bernini in Paris, and which he employed at Chelsea and Greenwich Hospitals, is effectively made use of here. But instead of what is known as "Wren's favourite Doric," just look at those Ionic caps! You must go and sketch them carefully to appreciate them. The carving of these and of the vases with ornamental trophies under them which mark the centre, is all excellent.

The colonnade faces the north; yet you never seem to want the sun to brighten it up, so admirably is it lighted and so well do the internal reflections dispel all gloom. The irregular setting out of the ceiling is the only thing I have never quite liked. I feel the same at Greenwich, where the ceiling under the regular colonnade is broken up. The continuous coffers would, I should imagine, have improved the perspective. But Wren did nothing without a purpose, or without consideration, and I should much like to know his mind upon it. I should like also to keep you longer at this colonnade, but I have other interesting works to inspect with you. This entrance, while it does not in any way clash with the surrounding buildings in this court, is the legitimate outcome of the Renaissance initiated by Wolsey and Henry VIII. Standing in this court you can take in the condition and progress of architecture from Wolsey's time in 1514 to George II.'s in 1732. It was not the influence of William III. which brought about this result, for we know that before his accession in 1698, some of the finest works of the Renaissance had already been carried out. In 1619 Inigo Jones had made his wonderful design for a Palace at Whitehall, and the small sample of his intended work was built. In 1678 the library of Trinity College was built by Wren. St. Paul's was commenced 1675, Chelsea Hospital in 1682, Winchester Palace (intended to rival Versailles) in 1683, and Kensington Palace in 1689, so that many notable buildings were built or in hand, and architecture was developing rapidly. If at Hampton Court the transition may seem sudden, we have to remember that no structural additions of any importance were made from Henry VIII.'s time until William and Mary's reign, *i.e.*, 1530 to 1690. Only in the internal fittings and decorations is there any indication of the early Renaissance. Little was done in Elizabeth's reign, except in the garden; only a few rain-water beads have her initials on them, and these, like those of Henry VIII., are decidedly Renaissance in character.

In James I.'s reign, Inigo Jones was appointed Surveyor in 1615, but I cannot discover any work of his in existence. His time was probably taken up in arranging the masques in the Great Hall for the Queen, and his imagination was exercised in wonderful architectural vistas and scenic effects. Mr. Law tells us in his interesting book that the players were a company entitled the "King's Company of Comedians," who had been incorporated by a warrant of King James a few months before, and that the second name on the roll is that of William Shakespeare, who was no doubt present in the palace. Even in Elizabeth's time the scenery was of a most realistic character, so that in spite of the general idea to the contrary, stage scenery is by no means modern, though it may be more perfectly adapted now. It was fortunate for William and Mary that with the occasion for additions, there was the man at hand. The King was delighted with the place and its capacities, and determined to bring it up to date, as he considered it wanting, as no doubt it was, in many of the conveniences of a modern palace. Mr. Law suggests that William was captivated by the long straight canal fringed with avenues of lime trees—such as met his eye at Haarlem and the Hague. I admire the King's taste; and the canal is a most effective feature. But I must not digress. Wren was set to work, and fortunately for him there was no Society for the Preservation of Ancient Buildings in his time, and not being a sentimental person, and having no great sympathy for Tudor work, or for that part of it which was irregular and broken up, he did away with the irregular and inconvenient south and east fronts.

If we examine Wren's plan we can readily see that it was determined by the aforesaid long canal on the east side. A centre line drawn from this to a point cutting the lines of the converging avenues would, to the mathematically-minded Wren, give the centre and building line of the new front, and this front would be at right angles with the centre line. From the centre to the south corner the length covers the old buildings, and, of course, the length from the centre to the north corner is just equal to it. The total length of this front is 300 ft. Again, the south front is at right angle with the east, and is 315 ft. long, a length which was fixed also by the buildings existing in the rear. Behind these fronts was an old court, called "Cloyster Green Court." The position of this court could not be altered by Wren in his reconstruction, and he therefore built on the old lines the new court known as Fountain Court, without reference to the centres of the new south and east fronts. The court is 116 ft. 10 in. on the north and south sides. The east side is 110 ft. 1 in., but the west is 1 ft. 1 in. shorter. This arises, as we may gather from the plans, in effecting a junction with the old and irregular walls.

These works, commenced in 1689, were left unfinished at the death of Queen Mary in 1694, and little further was done until 1698, when the destruction of the palace at Whitehall by fire determined the King to complete his palace at Hampton Court. There is an estimate by Sir C. Wren, given in Mr. Law's book, which tells us what work was proposed and from which we can infer the condition of the works in hand. I think I will quote this, as it is a good model of the sort of communication to a client on such matters:—

"ESTIMATE OF FINISHING PART OF HAMPTON COURT.
To the King's Most Excellent M^tie.

May it please y^r M^tie.

Your M^tie having been graciously pleased to signify y^r cõmandes to me, that I should give an estimate of the expense of fitting the Inside of the Roomes of State at Hampton Court, from the entrance out of the Portico, to the roomes already finished above staires, containing the Great Staires, the Guard Chamber, the Presence Chamber, Privy Chamber Drawing roome, Ante Roome, Great bedchamber, Lobby & Gallery for the pictures; in pursuance of this cõmand I humbly represent that although a perfect estimate of Finishing the Inside of any house is as uncertain as the charge of Furnishing, & is more or less according to the Intention of the owner; yet upon supposition that your M^tie would finish as decently as the greatness of the Roomes seemes to require, and having consulted y^r M^ties officers of the workes what is requisit to be don, the charge of each Roome, I have represented the work of each Roome, and the total expense as followeth.

1. *The Great Stair* to be made with steps of the Irish stone, such as are at Kensington, but longer and easier, with Iron Rayles of good worke, the Floor and Harth-paces to be well paved with marble; the walls to be wainscoted twenty feet high, with fine Dore-cases.

2. *The Guard Chamber* to (be) fitted for Armes as at Windsor and other houses.

3. *The Presence Chamber* to be fitted for Hangings with marble in the Chimney and the Stooles of the Windowes and proper Ornaments.

4. *The Privy Chamber* in like manner.

5. *The Drawing-roome* with some variety, as having the best furniture.

6. *The Anti-roome* well finished.

7. *The Great bed chamber* to be perfected.

8. *The Gallery* to be fitted for the Cartoons, with wainscote on the windowe side, and below the Pictures and between them, to preserve them from the walls, and with a marble chimney & marble Soyles in the windowes, and other things proper to complete the same.

9. *The Lobby* between the presence and Gallery to be ceeled and finished.

10. The boards of these Roomes (being already provided very good and drie) are to be layd after the best manner, without nayles and with battens under the joyntes.

The expense of this worke thus performed by good artists will amount to the sum of . . . 6800^li.

All the insides of these Roomes have been long since designed, and shall be presented to Y^r M^tie for your approbation and correction, and accordingly the expense may prove more or lesse; but I am humbly of opinion the worke may be decently performed to your M^ties satisfaction for the sume above mentioned.

It may further be considered that other things will be required for the accommodation of those who are to be neare your Royall person, and that the Courtes must be paved, more sewers made, and the water brought to more places, and other things necessary for your M^ties service which may be estimated as they are directed.

All which is most humbly submitted.

April 28, 1699. CHR: WREN'

Thus we gather that the east and south sides

were externally completed, and the upper rooms, but that the State rooms and staircases were not.

But the King contemplated further extensions, and there is a plan belonging to H.M.'s Office of Works shewing what I have little doubt had been a part of Wren's scheme from the first, the formation of a new and grand approach on the north side. Such new entrance was to be made commensurate with the grandeur of the new buildings then in hand. The plan, which has been kindly lent us this evening by H.M. Office of Works, shews the Great Hall as the central feature, with a double flight of steps to the hall level. The Hall, being a prominent feature, would then have taken its proper place in an orderly arrangement of buildings. The entrance court as planned was to be 300 ft. long by 230 ft. broad. It looks long, but we must remember that the moat made by Wolsey (probably the last ever found), was still in existence on the north side, and this court was brought out to it. Knowing what Wren could do with a colonnade, as in the Clock Court, and at Greenwich, we can readily imagine the magnificence of an approach such as he contemplated here. The stateliness of this entrance to the palace was to be still further enhanced by a 60 ft. drive through the park, a mile in length. And in contrast to the straight piece of water on the east side, a circular basin of water, 400 ft. in diameter (5 ft. deep), was to be formed at the palace end of the avenue, which at this point widened out so as to embrace a view of the whole palace. The great chestnut avenue in Bushey Park and the Diana Basin, as it is called, are the only parts of this great scheme which were carried out.

Like many another fine scheme of Wren's—like the palace of Inigo Jones for Whitehall—it was set aside. If disappointment came to such giants as these, *we* need not feel discouraged when our pet schemes and fine designs, by which we expected to set the world talking, are disregarded; indeed, the world has lost many good things for which it would have been the better!

In carrying out the work at Hampton Court Wren was hampered for want of funds (and here again we can sympathise with him!). As the work proceeded the funds ran short, and the Portland stone he loved was not forthcoming, so that he was compelled to use Bath stone dressings in many places—for instance, in the Fountain Court windows and on the south front. The upper range of windows on the east side of the court have all been renewed in Portland stone during the last few years. Sir John Taylor, in whose excellent hands the care of the structure is now placed, is also at work on the south front. To such a strait was Wren reduced that until a few years ago the central part of the south front was in cement. Now it is in Portland, as originally intended. Apart from its durability, Wren no doubt appreciated Portland stone on account of its weathering to a delightful silver grey, contrasting admirably with the red brick. That he regarded colour effects is evidenced by the bricks and slates he made use of. You will notice the difference in tint obtained by the dark red bricks in the base or lower story of the building and the bright colour of the "rubbers" above. On the south front there is a slight difference in the colour of the lower bricks. Whether this arises from the "weathering" on this side or is the result of another kind of brick used I am not certain. The lower brickwork runs nine courses to 2 ft., and the gauged and rubbed work above measures nine courses to 1 ft. 11 in., so the difference is slight. I do not know who invented "gauged" brickwork, but if Wren did not do so, it certainly cannot have been introduced much earlier.

The work at Hampton Court may be said to be after the Dutch manner, partly in compliment to Dutch William and partly it may be by his influence. It is lighter and less severe in treatment than many of Wren's other works, though without any loss of dignity or of monumental effect. Through it all, however, he has retained the English tradition. Whatever he assimilated he beautified. If there was any alloy, the gold predominated and the English stamp was upon the whole.

Mr. Maule, to whom I am much indebted for information, and who has kindly lent me the beautiful drawings and studies he has made of Hampton Court (they are doubtless known to you, but I commend them again to your notice for excellence of draughtsmanship and accuracy), has pointed out a curious, and to me unaccountable, difference on the east front. On the south-east angle there are twelve stone quoins, and only eleven on the north-east corner! You will see this on Wren's original elevation, so it would appear to be intentional. There are other variations; one notable one I must mention. The width of the windows does not always correspond on the outside and on the inside, as you will find in the rooms at the south-east corner. They are divided into four divisions by sash-bars, but inside there are only three divisions. Here Wren sought to reconcile the need for uniformity in the exterior with that for proportion in the interior. He could have sacrificed the latter, as the spacing of the windows shows, but then if you stand and look at the proportion of window to wall space, the relative scale of one to the other, which is too much neglected nowadays, you will readily admit at what a sacrifice this must have been. Such an expedient would not be permitted now, and I have not the heart to find any fault with Wren, especially as it teaches us a most valuable lesson. Again, with regard to the circular windows, a beautiful feature (which we are always trying to reproduce), they were designed for the upper part of the large galleries and rooms, and how finely they come in the guard room (the first to be completed) we at once admit; but in other places these windows form the light to the entresol rooms, and some are blanks. Though the purpose is not manifest on the exterior, it is legitimate, and the way the architrave to the circular windows is managed in these rooms is excellent.

Mr. Law severely criticises the pediment on the east front as being more or less a sham; but his opinion as to what Wren *should* have done I do not think will commend itself to an architect. He considers the pediment should rise above the balustrade and stand out with only the sky as a background! No; Wren was quite right, and I might cite numerous good examples of this decorative treatment of the pediment; but I must pass on and talk of the carving on these two fronts. That in the pediment is by Caius Gabriel Cibber, and represents "The Triumph of Hercules over Envy." Mr. Law is my authority for also attributing to him the coats of arms supported by cupids. The master carver was Grinling Gibbons, but he was not a figure sculptor, so that this may account for the work by Cibber. Grinling Gibbons is responsible for the rest of the carving, though William Emmett did some of it. Gibbons was excellent as a wood carver, but these heads and keystones on the arches of the ground floor windows in stone are so undercut, especially those with the initials of William and Mary in monogram, that most of the latter, at least, have had to be recarved—and, what is somewhat unusual, they have been quite as well done as the original. Beautiful as they are, however, the material has not been recognised, but has been treated as wood. The beautifully carved lintels and cills projecting over the entrances of the east front are in marble, and carved on the underside.

There were originally metal figures above the columns on the south front, but these were removed to Windsor by George IV. Lately two figures have been sent from Windsor by the Queen to occupy what is said to have been their old position against the central piers on the south front. The stone pedestals are there, and the figures appear to fit them. They represent Hercules and Mars. These figures are found reproduced on a small scale as supporting the firedogs in one of the fireplaces of the State apartments. Mr. Law has brought to light the important fact, viz., that the ironwork at Hampton Court was designed by Jean Tijou, a Frenchman. It was carried out in England, and Huntingdon Shaw, who has hitherto enjoyed the sole credit, most probably worked on it.

I must now rush you through some of the rooms of the Palace, entering by the King's staircase. The walls and ceiling of the staircase were decorated by Verrio, in the manner he had made fashionable. How far Wren was responsible we cannot say. Verrio was the master-painter, and did what he pleased. Passing through the King's Guard Chamber, we can only stop to notice the carved architraves and beautiful panelling in Norway oak, with garlands in limewood by Gibbons, and the large panels of excellent detail and proportions, which are characteristics of Wren's work. A few specimens of these are on the screen. The chimney-pieces have bold and varying architraves to the fireplaces. The King's rooms, which occupy the south block, lead one into the other. At the back of these, and looking into the Fountain Court is the King's Gallery or Great Council Chamber. This gallery, which has, therefore, a north light, was specially arranged for the cartoons of Raphael. It is 117 ft. by 24 ft., and 28 ft. high. For some reason, the circles which we see in the Court, and which correspond to the circular windows in the south and east fronts, are blanks. The light, therefore, is not so good as it might have been if they were windows. At present this gallery is spoilt, and its fair proportions hidden by a number of projecting screens, on which are exhibited small pictures. The Queen's apartments are on the eastern side, which is the principal front, Queen Mary's writing closet being at the corner, and adjoining the King's writing closet. Next to it is the Queen's Gallery. This is a fine room hung with tapestry, which looks remarkably clean and new.

With regard to this tapestry I should like to record the fact that this was discovered thirty-five years ago by the present courteous superintendent at Hampton Court, Mr. W. H. Pleasants. A picture having been removed, a defect in the woodwork behind made it apparent that some material was at the back like tapestry. Mr. Pleasants reported his suspicion to Lord Mount Temple, who at once sent word that he would make an inspection of the Palace, and that some of the woodwork was to be removed. Being an admirer of tapestry he was delighted to find that Mr. Pleasants' suspicions were confirmed. The woodwork was removed, and although dust and cobwebs abounded, and the huge and notable Hampton Court spiders marched out, the tapestry was in good order and, after a good brushing, it looks now as fresh as ever. I am under the impression that it must have been covered up by Queen Caroline in 1735, for in Hervey's memoirs it is stated that she (the Queen) was very fond of pictures and brought a number from Kensington Palace. However that may be, we are indebted to Mr. Pleasants for a sight of the tapestry which was put up by George I.

The private rooms are interesting. The private chapel being without external windows is lighted by a pretty dome. The Queen's bath adjoining is well known to most. The public dining-rooms, the Queen's private rooms in the rear, and the Presence Chamber and Guard Chamber were only finished in the reign of George II. The details of the large rooms are rather coarse and lacking the refinement which is to be found in Wren's work. I was under the impression that Hawksmoor had something to do with this work, but Mr. Law demonstrates that it is the work of Kent. Kent did not always succeed so well as he did at the Horse Guards, and here, though there are fine features, especially in the Queen's Guard Chamber, there is a striving after "bigness" which is assertive. The chimney-piece, with the Yeomen of the Guard as consoles, is ludicrous and quite out of scale; it is a bad piece of work and fails to impress the beholder. Passing through this room, we come out on to the Queen's Great Staircase. In the absence of drawings, there is little to be said beyond that it is rather larger than the King's Staircase. The windows in the Kitchen Court make it look lighter. The ironwork is good and the way the risers are managed in profile is worth noting. From the landing to the right and left are the narrow galleries leading from the King's and Queen's apartments. That known as the Communication Gallery, on the west side of Fountain Court, was completed by Wren in 1699. The gallery on the north of the staircase is now known as the haunted gallery, but that, as Rudyard Kipling would say, is another story. The gallery leads into the Great Watching Chamber and Henry VIII.'s Presence Chamber, finished in 1506. The Watching Chamber or Guard Room was an unusually large apartment, with a long bow window, plaster ceiling, and tapestry walls. The gallery also led to the Chapel, or rather the Royal pew.

If we draw a centre line through the Chapel, pew, and Great Hall we can see that they have been planned in relation to each other. Unless Henry VIII. destroyed Wolsey's Chapel, &c., as well as the Great Hall, this is additional evidence that the Hall was not enlarged by him. The Chapel was refitted and altered by Wren, and its carving by Gibbons and inlaid

wood reredos remind us of Trinity Chapel, Oxford. The staircase to the Royal pew from the ground floor is spacious and good in detail. The view of the ceiling and the whole Chapel from the Royal pew is very striking.

I cannot refer to any of the other rooms in the Palace as they are but little known to me, but I may just draw your attention to the Kitchens, which are well worth a visit. The Great Kitchen contains the utensils and the cooking appliances, which look as though they had been undisturbed since the cooks last used them. Notice the double arches over the chimney openings, the single keystone serving for the relieving arch as well as the stone arch under with its joggle joints.

I have but touched the fringe of the subject, but I hope I have said just enough to kindle in you the desire to know more about these interesting buildings. In Hampton Court the student has a great store-house of architectural treasures. I have only had time to speak of the buildings in a cursory manner, but let me advise you to make separate studies of the chimney pieces, the fire-backs, and fire-dogs, the old furniture, consisting of bedsteads, chairs, curtains, and needle-work, old card tables, and a perfect collection of silvered looking-glasses and old china. Then there is the ironwork, wrought and cast, which is a subject worthy of special notice. And, further, there is one matter about which I had hoped to say something, viz.: The *Gardens*. These, with their enclosing walls, piers, gates, steps, and terraces, might form the subjects of many papers. All these treasures are so accessible, and sketching orders so easily obtained, that Hampton Court should long remain a prolific mine to the student. Those who have charge of the building, with the attendants of all ranks, are the most courteous and obliging you could find, and any one who takes an interest in the building they love is sure of their help. In conclusion, I must publicly thank Sir John Taylor for his great kindness in lending us the valuable plans, which even if not the actual work of Sir C. Wren himself, were those from which he worked, and on which he has sketched. Also for the elevations, which seem to be his original drawings, and which the Secretary, the Hon. Reginald Brett, kindly consented to have removed from his room for our inspection. I have already spoken of my indebtedness to Mr. Law, and though I do not agree with his architectural criticisms, the information and facts he has collected together makes his "History of Hampton Court" most valuable to the architect. I may say, for the information of those who cannot afford the larger work, that he has just published a handy and very complete condensed edition which every student should possess. Mr. Maule's beautiful drawings I must again refer to. There is a good plan of the later buildings and the southern garden, and many details for which I am indebted to him. The beautiful reproductions from the book I am editing with my friend Mr. Macartney on the "Later Renaissance in England," and some of the drawings intended to be published in it, Mr. Batsford, the publisher, has kindly sent for your inspection, and they may serve to show that he is determined to make this work one of the most important contributions to the subject.*

The Chairman said he supposed there was no building within the vicinity of London which had greater interest to architects than Hampton Court Palace. Mr. Belcher, as one who had studied Hampton Court Palace, and who had great enthusiasm for Wren's work there, must be regarded as an authority on the subject. In looking through Mr. Law's most interesting historical account of the way in which Hampton Court Palace was erected and added to, they could more readily understand the reason for the differences in the building and the additions that had been made to it, for they could really trace from the commencement the designs of those who carried out the work. It was really a most remarkable thing that one man should have had so much to do with such a large building as Wolsey had. No doubt we were indebted to Wolsey, owing to the interest he took in the Palace, for the foundation of a building which, although added to by Wren in a totally different style, was of such complete interest and was characteristic, not only of the Tudor times in which it was commenced, but of the time in which Wren worked. If Wren had done what was thought right in the day of the Gothic revival, viz., to enlarge the building, and restore it in the original style, Hampton Court Palace would not, he was sure, have been so interesting, and certainly not so grand as it was made by Wren. He thought it was a matter of regret that funds were not forthcoming to carry out the grand schemes that Wren had in his mind. It was very interesting to see, thanks to her Majesty's Office of Works, and to Sir John Taylor, some of those designs that evening. Wren had a very grand scheme in regard to the Palace, but he never had an opportunity of carrying it out; in fact there was difficulty in getting money to pay for work that was done. In Mr. Law's book they were told that there was difficulty in getting the money for some of the beautiful iron-work and other work after it was carried out. Hampton Court Palace was a unique building, not only from an architectural but from a colour point of view, and it was no doubt because of that that the building was so much admired. From a colour point of view the building was remarkable, and architects and artists who went to the Palace admired not only the architecture, but the colour. In order to appreciate the arrangements of the building it was really necessary to understand some of the Court functions—the great State banquets, &c.—of the time. He found himself regretting that we had left behind us the days when it was possible to erect and keep up such grand buildings; things were very much more matter-of-fact now than they were then, and all the picturesqueness due to this State pageantry had been done away with. At the same time we should do all that was necessary to keep the Palace in a proper state of repair, and it was fortunate that the Office of Works took such care of the building. There was one cause of regret, however, viz., that some portions of the building served a different purpose now from what was originally intended. He thought it was in the reign of one of the Georges that the building was first divided up and made into residences for noble families, and, considering what had to be done to fit the apartments to such a purpose, it was a marvel that more mischief from an architectural point of view had not been done; and it was still more remarkable that the building had survived from the ravages of fire, although a year or two ago a fire did occur. Nothing aroused a stronger feeling among architects than that such a treasure should be exposed to the risk it was, and it was to be hoped that after the warning given by that fire, means had been taken to prevent the recurrence of this danger. It would be a national shame if every means were not taken to safeguard the building.

Mr. E. Law, who was called upon by the Chairman, said that though there was some disagreement between the lecturer and himself in regard to Sir Christopher Wren's work at Hampton Court, he hoped that no one would go away with the impression that he was not a most enthusiastic admirer of Wren's work at Hampton Court. He had studied it a great deal, and he knew that there was an immense field for architects and those interested in art to study the detail, the plan, and the whole scope of the building. It was only those who knew the place thoroughly, only those who knew the uses the rooms of the Palace were put to, could understand the difficulties that Wren had to contend with in making his additions to the older part of the building. Only those who knew this, and had studied the building, could fully appreciate the extraordinary skill and genius with which Wren had accomplished his task. In his book his remarks had been deprecatory only of Wren's action in pulling down some of the older parts of the building. He was sorry that there was not at that time a Society for the Protection of Ancient Buildings, because we might have had preserved to us another part of the Palace quite as interesting as the Tudor part which Wren left standing. There was an idea in the minds of Wren and his master at one time not to touch the old Palace, but to build another one some distance off, at Hampton. Possibly the site would not have been so suitable and convenient as that at Hampton Court, but he regretted that Wren did not apply his genius—though possibly the fault was William III.'s, who had no regard for English traditions—to adding a fine suite of State apartments to the building, but without unduly destroying the existing rooms, which were full of the most interesting work, and the most interesting historical reminiscences. Mr. Belcher had referred to Wren's proposal for very much enlarging the Palace beyond what it now is, and it was important that stress should be laid upon this, because what Wren had done was only a small part of what he intended, and what would have been done had William III. lived. There was plenty of evidence that a great deal was to be done towards the avenue in Bushy Park and also to transform the two first courts; and possibly if William III. had had his way there would have been no Tudor Hampton Court left; but he, the speaker, regretted that the grand entrance to Bushy Park was not built. The existing entrance was mean and inadequate. He must disagree with Mr. Belcher in regard to the chimneys in the Tudor portion of the Palace. These were ornaments to the whole design, growing out of the building without any disguising of the purpose they were intended to serve and they had been treated in a most masterly way. But let them look at Wren's part of the building, where they would see how much difficulty he had found in dealing with the chimneys in an adequate way. In one of the designs exhibited that evening the chimneys were put in, but in two others he did not show them at all, and it was very strange that in all the engravings of the building at this time—1703 to 1710—the chimneys in Wren's part of the structure were always omitted, though, of course, they existed. He (the speaker) considered that they formed a disfiguring element, rising as they did in a very awkward way along the balustrade, and he thought that that was an instance of the superiority of the Tudor treatment of the domestic buildings, though he said that without wishing to disparage Wren's treatment and the beautiful work he had accomplished. He sincerely hoped that architects would visit more frequently Hampton Court, for the facilities for study and enjoyment were unequalled anywhere else in England, and the Clerk of the Works, Mr. Chart, was always very ready to assist any one in research and study.

Mr. H. H. Statham, in proposing a vote of thanks to Mr. Belcher for his paper, said that the lecture was not only interesting, but it served to remind them that there was a great deal of history and architecture to be studied in the Palace, which, perhaps, some of them visited more as a holiday resort when they had an idle hour or two to spare on a sunshiny day in summer—and a more charming place at such a time he did not know. He must candidly confess that he was a Wolseyite. He admired the Tudor part of Hampton Court more than the Wren; and he wished that Wren had dealt more kindly with the older building, and had left some of those portions which he had pulled down—although he (the speaker) fully recognised, in the case of a new sovereign coming to a country and wanting a palace to live in, that the practical question of making it convenient and comfortable for him came first: that was the foundation of all architectural treatment. When he found students were invited to admire all Wren's work, he thought—would it not be better for them to think of it as architecture, to consider why they admired it. There was one part of Wren's additions which could be thoroughly admired, and that was the interior treatment of the quadrangle; and the reason he (the speaker) liked that quadrangle was because of the bold and broad manner in which it was treated. If the details were considered separately, it would be found that they had no very great interest: they were merely details such as could be seen in other great works of the period; but the manner in which the windows were massed together, not separately treated in a timid way, made the whole thing come out almost like a painter's sketch for the wall. In that respect he thought the quadrangle design was thoroughly admirable. But when he looked at the garden front, he thought—notwithstanding his admiration for Wren, whom he considered one of the greatest architects who ever lived—that if that particular front were thought of without the bias that Wren's name excited, it would be considered rather a tame design, wanting in skyline and flat in effect. As one matter of detail, he had always thought that the lines taken by the filling in of circular windows should be generated, so to speak, by the lines of the window frame, and the

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* The following illustrations of the Palace have appeared in the *Builder*:—The Great Hall, from measured drawings by Mr. W. Wonnacott, October 17, 1891; the "Fountain Court," from drawings by Mr. P. L. Marks, March 24, 1888; and the Chimneys, October 27, 1883.—ED.

space not cross-hatched without any reference to the lines of the window frames. That was one of the little points which might occur to them in studying the façade. It was the same defect that Robert Adam showed so often in his buildings, of having a large semicircular window with two upright mullions; the two posts clashed with the circular lines of the window, and the design did not in any way arise from the fact that the window was semicircular. In regard to the gardens at Hampton Court a very fine lesson could be learnt from them in the laying out of land around a large palace, although it was even finer and more complete in the original design than it is now. The garden near the Palace front was treated in a perfectly symmetrical way, and beyond that came what might be called the formal treatment of the forest. The garden and its parterres, which were purely artificial, were left here, replaced by ranges of trees, which in themselves were not artificial, but were arranged in artificial lines, forming a series of avenues radiating from the centre, so that the high artificiality of the garden combined harmoniously with the architecture of the Palace; while outside that were the free forms of the trees, still kept sufficiently in architectural lines to show that it was a park, and not wild country; and then, beyond that, was the wild country, the natural landscape. He had always thought that a very fine treatment, making the house the centre of the whole—an artificial centre, connected with the natural landscape by radiating avenues of trees. He thought that Mr. Belcher deserved their thanks for the interesting way in which he had dealt with the subject and for the illustrations which he had shown.

Mr. W. H. Seth-Smith briefly seconded the vote of thanks.

Mr. Percy Hunter said that the Palace was of great interest historically and architecturally. Historically, it seemed to be most associated with two names, Wolsey and William III., Wolsey being undoubtedly the greater man; Wolsey, as Mr. Law had shown, had not only built but had furnished the Palace with extreme magnificence. It was remarkable that in so short a time—in fact within the space of 160 years—the Palace, which was so magnificent for Wolsey and Henry VIII., should have become behind the age for William III. It was worthy of remark, as evidence of change of manners, that the building only existed in its original condition for about 160 years. He felt bound to add his protest against Wren's vandalism at the Palace, for it was much to be regretted that he destroyed so much that must have been of interest—and not only that he destroyed and pulled down most interesting parts of the building, but also, apparently, that he did not leave a record, or only a very slight one, of what he had destroyed. What most interested him architecturally was the chapel, and he had often tried to picture the condition in which Henry VIII. left it, and how the East end was finished. How valuable a plan of that would be at the present time! They must also regret the loss of the carved wooden stalls, which apparently were erected in the time of Henry VIII. He understood Mr. Belcher and Mr. Law to say that the ironwork at Hampton Court was made under one design and by one hand. He ventured to differ from that opinion, for there was such an immense difference between the refinement of the gates in the East front that lead into the gardens and the ironwork of the King and Queen's staircases, as compared with the very coarse details of the large gates known as the Lion Gates. There was a very great difference both in design and workmanship, and he thought that while Jean Tijou might be the designer and manipulator of the first two, it was Huntingdon Shaw who carried out the heavy and coarse detail of the other gates. While they owed very much to the Palace officials for the care that was taken of the building, he thought it was to be regretted that the gates in the Park entrance had been painted with a varnish paint, for the effect was most unfortunate. In regard to the battle of the chimneys, he knew of no more picturesque and beautiful effect than that which could be got from the roof of Hampton Court, especially when they were able to get a perspective view of the old Tudor roofs; and if they contrasted that view with that which they got from the same position of Wren's work he did not think that any one with any taste or feeling for architectural work would have any doubt as to the greater charm of the Tudor chimneys.

The vote of thanks having been put and carried by acclamation,

Mr. Belcher, in the course of a brief reply, said he did not wish to convey the impression that Mr. Law had any dislike to Wren's work. In regard to the chimneys, they were not omitted from Wren's drawings which he exhibited that evening, and if they would look at the photograph of the actual building, they would see that the effect of them was not at all bad. He drew attention to the fine example in Fountain Court. He quite appreciated what Mr. Statham had said in regard to the lines of the windows, though they had got accustomed to it in Gothic buildings, where it was very frequently seen.

The Chairman announced that the next meeting would be held on the 25th inst., when a paper would be read by Mr. F. W. Troup on "Lead Work, Plain and Decorative," with practical demonstrations.

The meeting then terminated.

Illustrations.

THREE CONTINENTAL THEATRES.

THE three theatres of which views are shown in the lithograph were among those specially referred to in Mr. Sachs's paper read at the meeting of the Institute of Architects on Monday.

The Vienna Court Theatre, generally known as the Hofburg Theatre, was the one which Mr. Sachs instanced, at the close of his paper, as the most adequate home of the drama, in an architectural sense, which had been erected, and as an example of the "radial" system of planning advocated by Semper.

We have before referred to the dispute as to whether the real credit ot the design is due to Semper or Hasenauer. Semper was the architect originally commissioned, in 1869, to prepare the first sketches for the building, and he was afterwards, in 1871, appointed architect to carry it out, in collaboration with Hasenauer, and resigned in 1874 owing to disputes with his colleague. The probable fact is that the theatre represents Semper's general idea and Hasenauer's details; but the question is no longer of any special interest.

According to the official statement, 550,000*l.* was the cost of the building, which seats 1,475 persons.

The Municipal Theatre at Bromberg is a typical instance of a playhouse supported from the rates, in a town having a population of 36,000. It has been executed from the designs of a specialist in theatre architecture, Mr. H. Seeling, and it is a characteristic example of his work, both in respect to the clearness of plan and its architectural treatment. It is a "two-tier" house, with ample accommodation in the form of foyers, cloak-rooms, &c. The building operations only extended over eighteen months, namely, from May, 1895, to October, 1896, and the total cost of the structure was under 23,000*l.*

The present Municipal Theatre at Zurich replaces an old theatre destroyed by fire in 1890, and the building fund was raised by subscription within a few weeks after the catastrophe, so that the origin of the building must be ascribed to the liberality of the leading citizens, and the playhouse classed as a subscription theatre. Zurich, it should be remembered, has only a population of 27,000, but there are extensive suburbs outside the city area, and a considerable number of tourists pass through the town every summer.

The commission was not given to a Swiss architect, though there was a public competition for the design, but to the Vienna specialists, Messrs. Fellner & Helmer, the same architects who designed the People's Palace in the same town. Here, again, we have a characteristic example of one of the many theatres erected by these architects. The accommodation provided includes seats for an audience of 1,230 (as well as some standing room), and these are distributed on a steep area and three tiers. Work was commenced on this building in 1890, and the opening performance took place in 1891.

ILLUSTRATIONS OF SOME SCOTTISH COUNTRY HOUSES.

WE have devoted a considerable portion of our lithograph illustrations this week to a series of houses, some of them entirely new, some of them adaptations of or additions to old houses, by Mr. R. S. Lorimer, of Edinburgh, who has made a special study of this type of simple but picturesque country house.

The following are Mr. Lorimer's notes on the several houses illustrated:—

"MOUNIE," ABERDEENSHIRE.

The existing old house is shown on the drawings. The additions have been designed so as to leave the old house as much as possible detached, to tell its own story, the entrance to the new house being through one of the vaulted rooms of the old house.

There are traces of the existence of an old garden—some old fruit trees and yew trees. The new gardens have been designed as part of one scheme with the house, stables, &c., and in the design the type of the old Aberdeenshire gardens has been followed.

GATE HOUSE, BALCARRES.

This gate house was built last year at the entrance to a new approach recently formed to Balcarres House, Fife. It is built of the local black whinstone, harled and whitewashed, and the roofs covered with old blue slates. The roof is surmounted by a stone figure.

The gate-pillars, walls, &c., are being carried out this year.

SIX HOUSES AT COLINTON, MIDLOTHIAN.

These houses have been built within the last two years.

As they form a group at the junction of two roads, they have been treated in the same manner. They are built of stone, harled and whitewashed, with red tile roofs. The plans have been laid out so that the public rooms command the fine view of the Pentland Hills, and the dining-room and drawing-room have, in most cases, been made to communicate by wide doors which slide behind panelling, thus getting the effect of a large room.

In each case the garden was thought out in conjunction with the plan of the house.

ST. MARNOCKS, CO. DUBLIN.

THIS house is situated about ten miles from Dublin, and is within a few hundred yards of the sea.

As the situation is very exposed the building was kept low, and a large enclosed flower garden was formed on the sheltered side of the house; along one side of this garden, and communicating with the house, an extensive range of conservatories was erected.

The house is built of local bricks and granite dressings. The floors are fireproof throughout.

Part of the drawing-room, and the kitchen court, belong to a former house.

The house is lit with electric light.

The ceilings of the main stair-hall, vestibules, and dining-room were modelled in position by Mr. Priestley, and the walls of these places are finished in oak and inlay.

A pair of gate lodges, terraces, &c., were also carried out. The works were completed about a year ago. Mr. R. S. Lorimer is the architect.

COMPETITIONS.

OFFICES FOR THE URBAN DISTRICT COUNCIL, EASTLEIGH.—The drawings in this competition were sent in only on Monday last, but the award has already been made. The first premium of fifty guineas (to merge in the commission) has been allotted to Messrs. Mitchell & Gutteridge, of Southampton, and the second premium of twenty guineas to Messrs. Colson, Farrow, & Nisbett, of London and Winchester. The cost of the building was limited to 4,500*l.*

THE SURVEYORS' INSTITUTION.—A short report of the discussion which took place on Monday at the Surveyors' Institution on Mr. A. A. Hudson's paper, entitled "Surveyors as Arbritrators," is held over until next week for want of space. The greater part of the paper appeared in our issue of January 29.

REREDOS, ST. PETER'S CHURCH, SUDBURY.—A new reredos, erected from the designs of the architect, Mr. G. F. Bodley, A.R.A., has just been dedicated at this church.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.—A list of applications under the 1894 London Building Act, brought up by the Building Act Committee at the last meeting of the London County Council, is postponed until next week for want of space.

MAGAZINES AND REVIEWS.

THE *Architectural Review* (Boston), Vol. IV., No. 8, gives as its principal illustrations the accepted design for the New York Public Library, by Messrs. Carrère and Hastings; complete geometrical drawings. It is a building in a modified classic style, with a good deal of originality, but we cannot say we like the effect of the low block of building at each end of the principal mass; it looks too much like an adjunct, and wants dignity of effect; nor does the plan afford any satisfactory explanation of this treatment.

The *Architectural Record* continues Professor Goodyear's exposition of the intentional distortion of Italian buildings of the Early Renaissance period, which has now reached its climax. The leaning tower of Pisa was built so for effect, the Baptistry is out of plumb for the same reason, and the well-known bulging of the angle of the façade of St. Marks, where the pushing-out effect of the arches, one would have thought, must be obvious to a child, is actually given as an example of "a delicate forward lean and return bend"! The author will hardly advance his reputation or that of the magazine in which he writes by such preposterous nonsense. Signor Melani contributes a short article on Palladio, who should have been treated in a more monumental article if at all. The number also includes a description of the new Library of Congress and an article on school buildings in New York.

The *Atlantic Monthly* contains an article of some interest by Mr. Russell Sturgis, on "The True Education of an Architect." The main point in the article is that the man who is in training to be an architect should "love building, he must love heavy stones, and stout, solid walls, and handsome timbers handsomely cut and framed. . . . What should be taught to the young man meaning to be an architect is, primarily, the how and the why simple, every-day building, such as has been practised for centuries, is adapted to all those materials which his own country furnishes, and is according to all those processes which his countrymen recognise." This is good, wholesome teaching, and the article is worth reading.

The *Gazette des Beaux-Arts* contains the second of a series of articles by M. Charles Yriarte on Scamozzi's designs and drawings for theatres and other building at the little town of Sabbionetta, where Scamozzi played pretty much the same part which Palladio played at Vicenza. The same number contains the second of a series of articles by M. Pierre de Nolhac on the history of the decorations of Versailles, with illustrations.

The *Art Journal* contains no article of the highest class of interest. "The Decorations of the London Clubs" iscontinued, but this kind of article seems more suited to a general illustrated paper than an Art magazine. There are two short articles dealing with art workmanship, those on "Art for Winter Evenings" and "Arts and Industries of To-day."

The *Magazine of Art* contains a finely illustrated article by Mr. Walter Crane on "Needlework as a mode of artistic expression."

The Studio (January 15) devotes an article to the works of Mr. Moira, whose original and poetic work, the "King's Daughter" we drew attention to when it was at the Royal Academy a year or two ago. Mr. Moira's work includes designs for stained glass, and the illustrations given in this article speak highly for his artistic gifts and his versatility. The number includes a chapter on a modern English country house, of which Mr. Arnold Mitchell is the architect, and on "Some Old Wrought Ironwork," by Mr. E. F. Strange.

The *Engineering Magazine* contains an article which ought to be of special interest at present, on the equipment and organisation of a city fire department, with special relation to the New York fire service, and with illustrations of some of the apparatus employed, which for convenience and readiness of action are much in advance of those known in London. The number also contains an article on hot-water heating for buildings, by Mr. J. J. Blackmore, which we presume represents the subject from an American point of view.

Of the two principal quarterly reviews, the *Quarterly* has a rambling article on "English Art in the Victorian Age," which represents little more than the current ideas of the day, and the writer starts with an entire misconception of M. de la Sizeranne, the French critic, in paraphrasing his sentence "Il y a une peinture anglaise" by the words "There is an English school of painting," inasmuch as that is exactly what the French critic proceeded to deny; our fault being, in his eyes, that we have no "school." The *Edinburgh* is a very good number, but none of the articles touch on subjects within our province.

In the *Fortnightly Review* Mr. Ford Madox Hueffer writes a short article on the Millais and Rossetti exhibitions, which contains some shrewd critical remarks, but in which Millais is much underrated and Rossetti much exaggerated; the author, as indeed he half confesses, being hardly in a position, for reasons of social and family connexion, to form an unbiassed estimate of Rossetti.

The *Century Magazine* contains an article on "Ruskin as an Oxford Lecturer," by Mr. James Manning Bruce, who seems to have culled from his memory all the extravagant, *outré*, and preposterous sayings he can recall, and asks us to bow down before the author of them. Surely it is time this form of lunacy spent itself.

Among the contents of *Harper* are an essay by Du Maurier on "Social Pictorial Satire," mainly a reminiscence of Leech and his work; an article on Stuttgart, with illustrations by Mr. Pennell; and one on "The Duc d'Aumale and the Condé Museum."

The department in *Scribner* headed "The Field of Art" is entirely occupied with a consideration of the influence of "English movements in Decorative Art" on America and France, in two short articles signed respectively "E. R. P." and "R. S." Both are well written and impartial, and recognise both the strength and the weakness of the school of decorative art of which Morris may be said to have been the founder.

The *Pall Mall Magazine* contains a popular article on the "Bookbinders Art" by Mr. A. L. Marlow, one on St. Michael's Mount, with some good illustrations, and the continuation of Sir Walter Besant's essay on South London, in which there is, however, more imagination than history.

The *Revue Générale* opens with an article on Pisa, by M. Arnold Goffin, with eight illustrations of architecture and painting. The article itself, however, is historical rather than artistic.

The *Essex Review* contains a long and largely illustrated article on "Some interesting Essex brasses"; also one on the Harveys of Saffron Walden, with a frontispiece illustration of Gabriel Harvey's picturesque old house.

The Quarry contains an article, the second of a series, on "Applied Geology," by Mr. Vincent Elsden, with diagrams, and an article on the Technology of Portland Cement, translated from *L'Industria*.

LONDON AND PROVINCIAL BUILDERS' FOREMEN'S ASSOCIATION.

THE annual dinner of this Association was held at the Holborn Restaurant on Saturday evening last, Mr. Henry Holloway presiding, supported by over 100 members and friends of the Association.

The loyal toast having been honoured,

The Chairman, in proposing the toast of the evening, "Success to the London and Provincial Builders' Foremen's Association," said that the employers had their organisations to protect their interests, the workmen had their trades-unions for the same purpose, and it was only right that builders' foremen, who came between the two other parties, should also have an organisation of their own. He was glad to notice that their aim was to improve their own positions educationally, as well as financially, and that desire, he was sure, would commend their Association to others. There was a very real need for better education in the building trades; it was a deplorable fact that masters had to pay the wages of skilled mechanics to those who were not worthy of the name, and it was very trying to the employers to feel that they had men associated with them who were not earning their money and who, if they were remonstrated with, abruptly threw up their work. It was fortunate that trade was so good, but he hoped the time would come when every man who professed to be a skilled mechanic would be able to carry out his work without so much instruction from those above him. He was glad to know that the Association met occasionally to discuss subjects of interest to foremen, and that from time to time they visited works in progress, for by these means they could not fail to learn many points of value to them, especially the younger men. He thought the country was at last waking up to a knowledge of the great importance of technical schools and institutes, but one of the great needs in such institutes, so far as the building trade was concerned, was competent instructors. Many of the present instructors were not at all capable of imparting knowledge in the proper way. Many able men, with much theoretical knowledge, were associated with these institutes, but what was required was some one to visit from time to time those in charge of these institutes and advise them as to the best methods of giving instruction to young men. Much of the instruction given at the present time was worse than useless, and if an Association like the Builders' Foremen's could arrange with the Technical Education Board to visit the technical institutes in order to see that the most practical methods were adopted, a great amount of good would be sure to follow, and he was glad to hear that some proposal of that kind was under the consideration of the Association. Their Association was not a provident institution, and so they did not clash with any existing body, though they did assist members in distress; but the Association was mainly an educational institution. As they invited men like himself to join as honorary members, he should be glad if they would accept him in that capacity.

Mr. G. Morley, the President, in reply, referred to the origin and history of the Association, which was formed in May, 1894. It was not a provident institution, but it existed for the purpose of mutual help and education. They desired very much to promote a closer union between builders' foremen and their employers, and to use their influence to bring about a satisfactory settlement of any disputes which might exist between masters and men. The Association hoped to obtain the support and recognition of the employers, and they hoped that if at any time the masters were in need of competent foremen they would apply to the Association. They had meetings on the last Saturday of each month, when papers were read and discussed by their members. He hoped that the apprenticeship system would be revived, for they had no means at present of knowing what a man's qualifications were until after they had engaged him, when very often he was found to be incompetent. The best way to avoid that was to encourage a revival of the apprenticeship system. At present men who had served only two or three years at a trade went on to a job as fully qualified workmen, and the masters had to pay them the full rate of wages; that was an injustice to both the masters and the qualified workman, and he advocated the establishment of two classes of workmen—a first and a second class. All qualified men would be placed in the first class, and those who were not so qualified would go into the second, receiving a ½d. or 1d. an hour less in wages, until they had made themselves competent to enter the first class. The Association was endeavouring to raise the standard of the various branches of the building trade. He hoped that other masters would follow Mr. Holloway's example and become honorary members, for he hoped that a very strong link would connect the employers and the foremen.

The Chairman then proposed "The Building and Kindred Trades," referring, in the course of his remarks, to the difficulties under which masters now carried on their business; but though they had many troubles to contend with they had pleasures also, and he, for one, found the building trade a very interesting one. He thought that they would sympathise with the masters in the recent engineering dispute—and the men also, for they had suffered a good deal during the dispute. On the whole the trade of the country was bright and encouraging, and they had every reason to congratulate themselves.

Mr. Cook responded; and the other toasts were "The Press," proposed by Mr. W. N. Pennington, and acknowledged by our representative; "The Chairman," proposed by Mr. Morgan, vice-president; and the "Visitors," proposed by Mr. Knowles, and responded to by Mr. B. Carter.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The British Archæological Association will hold its next summer meeting at Peterborough. The proceedings commence on July 14 with an inaugural address by the Bishop of Peterborough.

ARCHITECTURAL DRAWINGS FOR THE PARIS SALONS.

THE days for receiving architectural drawings for the Paris Salons are, for the "Old Salon" (Société des Artistes Français), from the 1st to the 5th of April; for the "New Salon" (Société Nationale des Beaux-Arts) from the 12th to the 14th of April. Drawings for the Old Salon, the one which devotes the most space to architecture, should be addressed to "Monsieur le Président de la Société des Artistes Français, Galerie des Machines, Avenue La Bourdonnais, Paris (Seine)." Drawings intended for the New Salon may be similarly addressed to the President of the "Société Nationale des Beaux-Arts," also at the "Galerie des Machines," as the two Salons (as already stated in our columns) will both occupy the "Galerie des Machines" this year, and probably till after the 1900 exhibition; but English architects will do better to send to the Old Salon, which has always made architecture a much more important feature in its exhibitions than the New Salon.

ARCHITECTURAL SOCIETIES.

MANCHESTER SOCIETY OF ARCHITECTS.—Mr. Basil Champneys read a paper to a meeting on the 1st. inst. of the members of this Society, taking as his subject "A comparison of the claims of the Gothic and Renaissance styles." Mr. John Ely presided. Mr. Champneys described the chaotic condition in which architecture was left at the end of the last century, and some of the ephemeral phases which followed the lapse of tradition. He said the main currents of architectural revival had been on two lines, Gothic and Renaissance, and he traced in some detail the mode of development which each of these rival styles underwent. A considerable proportion of the architectural enterprise of the last thirty years had been devoted to a combination of the elements of the two styles, either by a reversion to one or other of the many types of transitional style developed in the past or by deliberately combining anew ideas and features natural to both. He was far from saying that the hopes of the future might not be bound up in some such compromise, but up to the present time it seemed to him that efforts of this kind had been too incoherent and too scattered to make any considerable permanent impression. The main object of his paper was to break a lance in vindication of the Gothic—a great style of architecture which, after holding the field for some considerable time, showed signs of passing out of fashion. In that style more than any other were perfectly displayed principles which must be obeyed in any style which claimed to fulfil the highest conditions of architectural effect. As to the question whether there was a probability of a new style being formed, he said they would in any case have to wait for it for centuries. A vote of thanks was given to Mr. Champneys on the motion of Mr. C. Heathcote, seconded by Mr. T. Chadwick.—*Manchester Guardian.*

YORK ARCHITECTURAL SOCIETY.—The annual dinner of the York Architectural Society was held on the 29th ult. in the "White Swan Hotel," Pavement. Mr. George Benson, President of the Society, took the chair, and there were also present Mr. William Emerson, Hon. Secretary, Royal Institute of British Architects, Mr. George Corson, President of the Leeds Society, and others. The Chairman, having proposed the Royal toast, Mr. George Corson proposed "The York Architectural Society," and said that the provincial societies had been the product of the last twenty years. Before that time architects scarcely knew each other, and these societies had been the means of social union and of bringing together the friends of their art.—The Chairman, in response, said that their Society was instituted sixteen years ago, and of its five founders three were present that night. He alluded to the union of the Society with the Royal Institute of British Architects, and said he wished their Society could do more for the Institute. Six Associates and two Fellows during the time the Society had existed was not very much. It was their privilege to live in a city where the spirit of the ecclesiastical, civil, military and domestic life of the past found material expression in the buildings around them. Each of those buildings showed that the men of the past were able to produce some very good work. Those old buildings, even in decay, were very interesting and appealed to them even more eloquently than words could. Their picturesqueness, peculiar outlines, the use of the timber in the natural form, all combined to make a picture in the streets for every passer-by to gaze upon, and to think about. He regretted that it was felt necessary to sacrifice the old gateway at the entrance of College-street for public improvements, for it was the only remaining gateway of the walled-in Minster close. Having alluded to the various styles of architecture to be found in York, the President alluded in feeling terms to the deaths of Mr. R. N. Yeomans and Mr. T. P. Bulmer.—Mr. H. Perkin proposed "The Archbishop of York, Clergy, and Ministers of all Denominations," and the Rev. G. H. Hewison responded.—Mr. A. Pollard proposed "The Royal Institute of British Architects." Mr. W. Emerson responded. He said it had never been the idea of the Institute to become an educational body. That was more than they could possibly entertain. Their object was to attend first to the professional interests of their profession at large, and their action in matters of that sort was strengthened by the alliance of the provincial societies. The Institute had always had the idea of becoming an examining body, and that, during late years, had been fairly well accomplished, and the examinations were now held regularly. Also, with regard to the alliance with the provincial societies, their object was to encourage social intercourse with and knowledge of their professional brethren. He went on to say that he had been much struck lately with the deterioration in English architecture and the introduction of so much pretty elaboration and meaningless ornament. Why was this deterioration, and why was there often so much difference between the buildings erected and the drawings shown? Was it because they were anxious to make pretty drawings to win competitions and please their clients, or was there really a decay of good taste? If so, why was it? Was it because of the decadence of the nation? It had set him thinking that the decadence of architecture and the decadence of nations was usually synchronous, and in ancient Greece, in the later years, this was the case when it arrived at the Corinthian style and made its buildings very elaborate, but exceedingly beautiful. This only happened when the nation was going in for a course of luxury and effeminacy; and shortly after the nation was wiped out. The Roman nation began with severe but beautiful buildings. Towards the later period, when they came to the Composite order of architecture, with its elaborate decoration and workmanship, they were in the most luxurious and vicious state of society the world had seen. From that period he supposed that they could say with truth they began to decline and fall. The Mahommedan architecture culminated in the Alhambra, a gorgeous piece of work, but not to be compared with the early work in Egypt and North Africa, and shortly after that time they gradually wasted away in power. After the time of Henry VII., the English nation went through the fiery trial of the Reformation, and since then we had certainly a simpler style of architecture; but during the last twenty or thirty years we seemed to be falling away; we seemed to be getting vicious, and architecture had gone mad. Was it that the nation was on its wane, and the taste becoming vulgar? Did it mean that we had to become purged by the great war they heard of as shortly to come? He had great faith in the destiny of the British nation, and if they did have a great war, he trusted they would come out of it purified as a nation, and purified in taste with regard to architecture?—Mr. E. T. Felgate proposed "The Corporation of York and prosperity to the City," and Mr. Councillor T. H. Storey responded. At the conclusion a vote of thanks was passed to the Chairman, on the proposition of Mr. Cripp.——We have received the annual report of the Society, which has completed its sixteenth session. Among the papers read during the session were those on "Haddon Hall," by Mr. A. J. Penty, on "Heraldry," by the Dean of York, and on the "History and Development of York Minster," by the Rev. Canon Argles. A Society's prize has been awarded to Mr. F. E. Wootton, of York, for a "Design for a Vicarage, with Parish-room attached."

EDINBURGH ARCHITECTURAL SOCIETY.—The first meeting of the session in connexion with this Society was held on the 2nd instant, in Dowell's Rooms, George-street. Mr. W. N. Cumming, the President, occupied the chair. After the usual business had been transacted, the awards in the various prize competitions held during the past session were announced. These were as follows:—Hon. President's prizes for "A design for a branch Free Library, Museum, and Picture Gallery"—First, Mr. W. A. Mellon; second, Mr. W. Fairbairn; President's prize for "six sheets of measured work"—Mr. J. H. Rutherford; Vice-President's prize for "Design for reredos and altar frontal for a country church"—Mr. P. E. Nobbs. Mr. Cumming announced that Mr. John Kinross, A.R.S.A., had consented to accept the hon. Presidentship. He then proceeded to sketch briefly the work proposed to be undertaken by the Society during the session upon which it had entered.

GLASGOW INSTITUTE OF ARCHITECTS.—A quarterly general meeting of this Institute was held in the Rooms, 187, Pitt-street, on the 27th ult. Mr. John J. Burnet, A.R.S.A., occupied the chair. A recommendation by the Council that the President and late President be elected to act with the City Engineer in formulating the conditions of competition for Springburn Halls was approved of, and these gentlemen were declared elected. It was intimated that for the Phebe Hearst Architectural Competition for the University of California, the following articles had been received, and are now on exhibition in the rooms of the Institute, 187, Pitt-street, viz.:—A plaster relief map, a set of photographs, topographical maps of the grounds, and programmes of the competition. The President referred to the recent election of the President of the Royal Institute of British Architects as a Royal Academician, and the secretary was instructed to convey the congratulations of the Glasgow Institute to the Royal Institute of British Architects on the event.

NORTHERN ARCHITECTURAL ASSOCIATION.—A meeting of the members of the Northern Architectural Association was held on the 2nd inst. in the meeting room, Art Gallery, Newcastle, the President (Mr. F. W. Rich) in the chair. It was announced that arrangements were in progress for the removal of the Association to premises more permanent and suitable to their requirements. Mr. Geo. B. Bulmer, of Leeds, read a paper entitled "To Ancient Rome," in which he gave an account of an architectural student's Italian holiday. His paper was illustrated by lantern views.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The monthly meeting of this Society was held at the School of Art on Tuesday evening, when Mr. Hugh Stannus delivered a lecture on "Proportion." He mentioned and explained, by means of illustrations and numerous sketches on the blackboard, the various theories of proportion—arithmetical, geometrical, harmonic, triangular, constant, difference, &c.—as applied to architecture and other arts, showing that each contained some truth, but not the whole truth on the subject. He demonstrated that the quality of proportion subsisting in art is not positive, but negative, and that objects which are not in bad proportion are in good proportion, within certain defined limits, in varying degrees; and he further showed the application of this theory (his own, which he had evolved after testing and finding the others to be inadequate) to various objects of three dimensions.—It was announced that the next lecture will be on March 8, by Mr. C. Castle, on "English and Foreign Timber for Building and Decoration," and that the prize drawings of the Royal Institute of British Architects will be exhibited in Sheffield on March 9, 10, and 11.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The fifth meeting for the present session of this Association was held at the rooms in Sackville-street, Piccadilly, on the 2nd inst., Mr. Thomas Blashill (hon. treasurer) occupying the chair. Mrs. Collier exhibited two prints from engravings on copper by Albert Glackendar, of playing cards used in the seventeenth century, the cards being the eight and ten of swords. The Rev. H. J. Dukinfield Astley, hon. secretary, exhibited several arrow heads and early flint implements found in Norfolk, also a good example of a farthing of the Irish money of Charles I. Mr. J. Chalkley Gould read a paper upon a somewhat unusual and

seemingly, from its title, rather dry subject, viz., "A Naval MS. of the Time of James II." The MS. is in the form of a small bound volume, beautifully written, and is full of curious information concerning the ships of the British Navy in the latter days of the last of the Stuart Kings of England. The writer of the book is unknown, but from internal evidence, it seems highly probable that it was prepared under the personal supervision of Samuel Pepys upon his resumption of the office of Secretary of the Admiralty, in 1684, after five years of retirement, by the request of Charles II. The MS. is full of curious information and valuable statistics as to the size, tonnage, ornament, and so forth, of the ships of His Majesty's navy; but much historical information is also to be gleaned from its pages. It may be mentioned that the largest ship of Pepy's time mentioned is the *Brittannia*, 146 ft. long, 47 ft. broad, and 1,546 tons. The paper was illustrated by a fine engraving of the naval engagement off Cape la Hague, from a painting by B. West, showing very correctly the type of ship of the period; also by an original pen and ink drawing of the stern and quarter of a man-of-war, by "Della Bella," a Florentine artist (born 1610, died 1664), contributed by Mr. Patrick, hon. secretary. A facsimile of the illustration of the Dutch Fleet in the Medway and Thames, taken from the Hill of Gillingham by Evelyn, the original of which is in the Bodelian Library at Oxford, was also exhibited.—The hon. sec. announced that the Annual Congress would be held at Peterborough, by the invitation of the Mayor and Corporation, in July next, commencing on the 14th, and concluding on the 20th, both days inclusive. The Lord Bishop of Peterborough had consented to be President, and would deliver the inaugural address.

ENGINEERING SOCIETIES.

THE CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—At a recent meeting of this Society, held at the Hotel Victoria, Northumberland-avenue, a paper on "Some Methods of Heating Air," was read by Mr. W. N. Twelvetrees. The paper was illustrated by numerous diagrams demonstrating the manner in which certain natural laws directly affect the questions of heating and ventilation, and showing the various systems adopted and some of the defects frequently causing failure in practice. Want of space prevents our giving this week any further report of the paper, to which we may return in another issue.

SOCIETY OF ENGINEERS.—The first ordinary meeting of the Society of Engineers for the present year was held on the 7th inst. at the Royal United Service Institution, Whitehall. Mr. George Maxwell Lawford, the President for 1897, occupied the chair, and presented the premiums awarded for papers read during that year, viz.:—The President's Gold Medal to Mr. R. F. Grantham for his paper on "Sea Defences." The "Bessemer Premium" to Mr. P. M. Faraday for his paper on "The Rating of Engineering Undertakings." The "Rawlinson Premium" to Mr. R. E. Middleton for his paper on "The Pollution of Water and its Correction"; a "Society's Premium" to Professor H. W. Umney for his paper on "The Compression of Air by the Direct Action of Water"; and a "Society's Premium" to Mr. J. Croll for his paper on "Filter Presses for Sewage Sludge." Mr. Lawford introduced the President for the present year, Mr. William Worby Beaumont, to the meeting, and retired from the chair, receiving a hearty and unanimous vote of thanks for his services during the past year. Mr. Beaumont then delivered an address.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring-gardens, Dr. Collins (Chairman) presiding.

Loan.—On the recommendation of the Finance Committee, it was agreed to lend the St. Pancras Guardians 2,000*l.* to defray the cost of alterations and additions to the Leavesden Schools.

The Works Department.—Mr. Corbett asked Lord Welby, Chairman of the Finance Committee, whether he was correctly reported in a daily paper as having said, "As I warned the Council at the time, the Finance Committee is not able to exercise a direct control over the small details of the business of the Works Department. The coming election must determine the question as to the continuance of the Department. A majority for the Moderates will probably mean its total abolition, while a victory for the Progressives must be followed by the re-establishment of the Works Committee, or some new device for ensuring the proper control of the Department"

Lord Welby replied that the paragraph certainly represented in sense and meaning what he said. It would be impossible for the Finance Committee to have control over the details of work at Belvedere-road, the chief depot, but they were quite able to exercise financial control over the financial part of the works.

Patent Fire Appliances.—The General Purposes Committee reported as follows, the recommendation being agreed to:—

"The Fire Brigade Committee have informed us that Commander Wells, the chief officer of the Fire Brigade, has obtained provisional protection for two fire appliances which he has designed. The appliances are (1) a nozzle, and (2) an arrangement for carrying a supply of water and compressed gas. The Fire Brigade Committee are of opinion that, subject to further experiments now being made by the chief officer, the appliances will be of service to the Brigade, and they accordingly suggest that the chief officer should be authorised to take out patents for both the appliances. We understand that the chief officer desires to place his invention entirely at the disposal of the Council. We recommend that the Council do grant permission to Commander Wells to take out patents for the appliances referred to, on the understanding that the patents are placed entirely at the disposal of the Council; and that the solicitor do prepare such agreement as may be necessary in the matter."

Protection from Fire in London.—The Council resumed the discussion on the Fire Brigade Committee's report, containing proposals for increasing the number of fire stations and appliances to a great extent. Last week, when the question of adopting the estimate of 197,000*l.* was before the Council, Colonel Ford moved, and Mr. Thornton seconded, an amendment to add the words, "But that it be referred to the Committee to consider and report as to whether the Government should not be approached with a view of utilising to a greater extent than at present the services of the police force in connexion with the extinction of fires, and also whether the money contributions from the fire insurance offices and from the Government ought not to be increased."

Colonel Rotton (Chairman of the Committee) said the effect of the amendment was to delay the scheme.

Mr. N. W. Hubbard contended that the contributions of the insurance companies and of the Government were inadequate.

The amendment having been rejected upon a show of hands,

Lord Welby moved a further amendment:—"That the question of the method by which the Fire Brigade expenditure is to be defrayed be referred to a joint committee of the Finance Committee and the Fire Brigade Committee for consideration."

This was agreed to as an addition to the Committee's recommendation, which, as amended, was thereupon adopted. The other recommendations of the Committee, relating to the provision of fire stations in various parts of London, were also agreed to.

Taxation of Ground Values.—The consideration of the recommendations of the Local Taxation Committee was resumed, and the following was agreed to without discussion:—

"That, as the present system of Exchequer contributions from the taxpayer to the ratepayer by means of the Exchequer grants appears to operate so as to withdraw from Londoners more than it returns to them, no system of Exchequer contributions distributed to the whole country upon the present basis of division ought to be accepted on behalf of London."

The Committee further recommended—"That it is desirable to substitute as local revenue the inhabited house duty and land tax in London and other counties (adjusted as suggested in the statistical officer's memorandum) for the share of probate duty and beer and spirit duties now transferred, and that in that event it will be desirable that County Councils should have power to propose from time to time, subject to approval of Parliament, schemes for amending the present incidence of inhabited house duty."

Mr. Shaw Lefevre moved an amendment to refer the recommendation back, on the ground that the scheme of relief proposed by the Committee required further consideration.

Mr. Costelloe agreed to accept the amendment, which was carried on a division by 50 votes to 42.

The next recommendation was agreed to, as follows:—"That it is desirable that the question of requiring the owners of empty tenements to pay (as is done in the City of London with regard to the sewers rate) the whole or part of the ordinary rates should be raised in connexion with the evidence to be given before the Royal Commission.

It was further recommended that, having regard to the impossibility of locating all movable property, no suggestion should be made to the Local Taxation Commission with regard to the local rating of such property.

An amendment by Mr. Urquhart was rejected, and the recommendation was adopted.

Mr. Shaw Lefevre moved—"And that attention be called to the unequal grants to schools under the Voluntary Schools Act, 1897, and to the very serious wrong done to London and other urban districts by the Agricultural Rates Act, 1896, and that in the opinion of the Council it would be most unjust to renew that Act in 1901."

Earl Russell seconded the motion, which was carried by 45 votes to 37; and it was agreed that Mr. Costelloe should give evidence on behalf of the Council before the Commission.

Telephone Service.—The Highways Committee recommended:—"That, with the view of obtaining an investigation with regard to the telephone service in London, similar to the inquiry recently held as regards that service in Glasgow, the Council do make an application under the Telegraph Act, 1892, to the Postmaster-General for a licence empowering the Council to provide an independent municipal telephone service for the County of London." To this Alderman Beachcroft moved as an amendment:—"That a communication be made to her Majesty's Government pointing out the desirability of an investigation with regard to the telephone service in London, and asking that the Select Committee appointed by the House of Commons in 1895 to consider and report on the telephone service may be reappointed." This was rejected, and the recommendation of the Committee was, on a division, carried by 44 to 31.

New Fire Station at Lewisham.—The Fire Brigade Committee reported as follows, the recommendation being agreed to:—

"The Council will remember that during the summer recess tenders were invited by public advertisement for the erection of a new fire-engine station in High-street, Lewisham, in substitution of the existing inconvenient station at Rushey Green. Only one tender, that of Messrs. F. & M. Patrick, amounting to 14,015*l.*, was received, and this tender, being considerably in excess of the architect's estimate, was not entertained. After the receipt of the tender, the chief officer suggested a few slight alterations in the drawings of the proposed building, and the architect reported that the adoption of these suggestions would have the effect of increasing by 120*l.* his estimate of 12,710*l.* based on the bills of quantities. We thereupon referred the revised estimate of 12,830*l.*, with the drawings, specification, and bills of quantities, to the Works Manager, who reports that he is not satisfied with the estimate. Under these circumstances, the only course open is to again invite tenders for the work. We accordingly recommend—That tenders be invited by public advertisement for the work of erecting a fire-engine station in High-street, Lewisham."

Sewage-contaminated Oysters and other Shell-fish.—The Public Health Committee reported as follows:—

"On July 27 last we submitted to the Council a letter from the Town Clerk of Brighton asking the Council to affix its seal to a memorial to the Local Government Board, praying for legislation for the purpose of minimising the dangers to which the public are exposed through the consumption of sewage-contaminated oysters and other shell-fish. In view of the statements made by medical officers of health in London that they had grounds for suspecting that oysters had been the cause of enteric fever, the Council decided to support the application of the Brighton Corporation, but without suggesting the particular lines which such legislation should follow; and a letter in accordance with the Council's resolution was addressed to the Local Government Board. The Town Clerk has since written to say that the memorial has been adopted by twenty-seven of the thirty-three great towns invited to join in the application, and that the President of the Local Government Board has agreed to receive a deputation representing the memorialists at an early date, of which notice will be given. As the Town Clerk wished to know whether any members of the Council would be able to accompany the deputation, we requested our

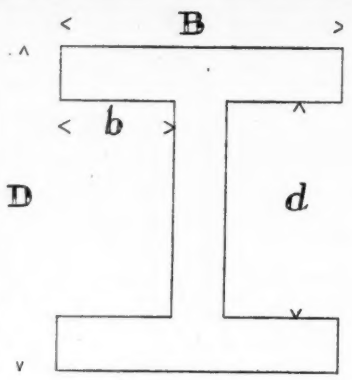


Fig 1

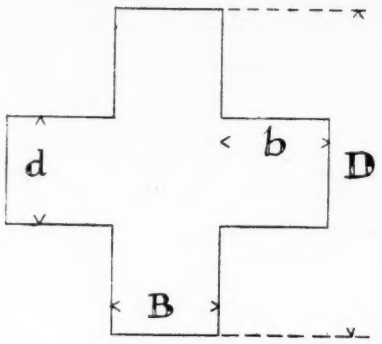
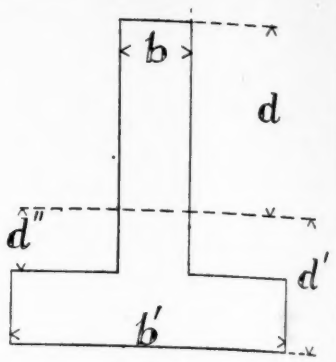


Fig 2



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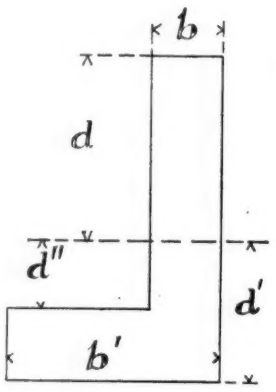

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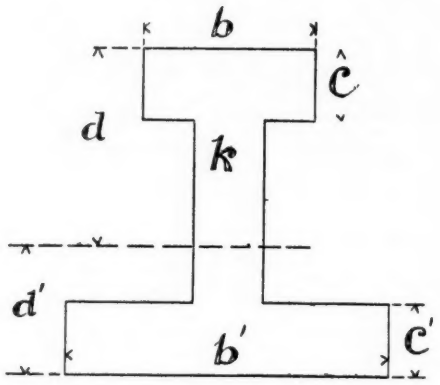

Fig 5

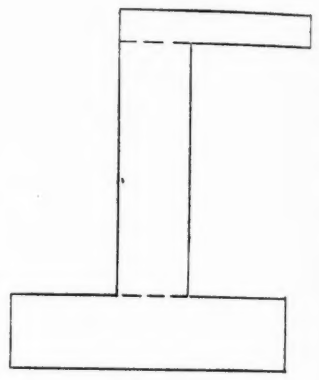
Fig 6

Chairman and Vice-Chairman to do so, and replied to that effect. We have also, at the Town Clerk's desire, addressed a letter to each of the members of Parliament representing London constituencies, explaining the objects of the memorialists, and stating that his presence with the deputation would be highly esteemed; and the replies received have been communicated to the Town Clerk. We report these facts for the information of the Council."

Proposed Greenwich Tunnel.—The Bridges Committee reported as follows, the recommendation being agreed to :—

"We have to submit the drawings, specification, and quantities which have been prepared in the Engineer's department for the works in connexion with the construction of the Greenwich footway tunnel. In doing so, we have to call the attention of the Council to the fact that the work will have to be carried out under the Thames by means of compressed air, and is of an exceptional character. It therefore appears to us to be expedient that only the tender of a firm of high standing and that has had experience in such work should be accepted, as it is necessary that when the work is commenced it shall be carried through without difficulties arising as to the capability and experience of the firm carrying out the contract. Under these circumstances, we suggest that we should be authorised to invite tenders on behalf of the Council from such firms as we may think desirable, including, as far as possible, those firms who tendered for the Blackwall Tunnel, as well as those who have since then carried out similar work, the number to be invited not to be less than six. The tenders, when received, will, in accordance with the usual practice, be opened at a meeting of the Council. We recommend—That the drawings, specification, and quantities for the proposed Greenwich footway tunnel be approved, and that the Bridges Committee be authorised to invite tenders for the work from such firms as they may deem expedient."

The Council adjourned at 7.25 p.m.

The Student's Column.

THE CALCULATION OF STRENGTH OF MATERIALS AND RESISTANCES.—VII.

THE next formula of which our student will probably desire to have an example of the working is that which we gave for the deflection of a beam, as under :—

$$D = \frac{n\,w\,l^3}{E\,I}$$

as given in Chapter IV. E is the modulus of elasticity, which may be thus explained :—

The modulus of elasticity is the load which would stretch a uniform bar to twice its original length, or shorten it to zero, if it were assumed that the ratio of the amount of stretch or compression bore the same relation to the load as it does within the limit of elasticity. Within the limit of elasticity a uniform rod of any given material stretches or shortens equally under equal conditions of load.

This fact does not hold good in all cases beyond the limit of elasticity of the material; but, assuming that it did do so, then the modulus of elasticity is as stated above.

The student will remember that we have already pointed out that material differs considerably in its quality, it is therefore not surprising that the modulus of elasticity is given by various authors at different values for the same materials. But we give below a table of moduli of elasticity for different materials, which may be taken as a fair average :—

Cast iron.....	5,400 tons per square inch to 10,000 tons per square inch.
Wrought iron	8,000 tons per square inch to 17,500 tons per square inch.
Steel	13,000 tons per square inch to 18,500 tons per square inch.
Fir.....	700 tons per square inch.
Oak	450 tons per square inch to 900 tons per square inch.

Although we must assume for the present that the student is unacquainted with the Theory of Moments, still, as the factor I in our formula stands for the moment of inertia, we must give some definition and information as to what is meant by the moment of inertia, premising that, if the student finds it difficult of comprehension, he would do well to leave this for the present until we have hereafter explained the Theory of Moments.

The sum of the products for all the fibres, in any given section, of the area of each fibre, multiplied by the square of its distance from the neutral axis, is called the moment of inertia. It follows, therefore, that whatever the form of the cross section may be, the moment of inertia of the whole area about any given neutral axis equals the sum of the moments of inertia of the several parts about the same neutral axis. This is a useful deduction, as from it we are able to find the moment of inertia of any section of irregular outline if we can subdivide the irregular area into regular parts. Thus, an irregular shaped beam, made up of a series of rectangles, as fig. 6 in the diagram, has its moment of inertia about its neutral axis equal to the sum of the moments of inertia of the rectangles of which it is composed about the same neutral axis.

We will now give the moment of inertia of a few well-known figures.

Square. I = Fourth power of side divided by 12, where any side or diagonal is vertical.

Parallelogram if rectangular, or otherwise when the neutral axis is parallel to either of the sides. I = Breadth multiplied by cube of depth divided by 12. The breadth must be measured parallel to the neutral axis, and the depth at right angles to it.

Hollow Square or Rectangle.

$$I = \frac{(B \times D^3) - (b \times d^3)}{12}$$

where B and D are the greater, and b and d the lesser breadth and depth.

Circle. I = Fourth power of radius multiplied by 0·7854.

Semi-circle. I = Fourth power of radius multiplied by 0·1098

Ring. I = Difference between fourth powers of radii multiplied by 0·7854.

Ellipse with long axis vertical. $I = d \times \left(\frac{D}{2}\right)^3 \times 0{\cdot}7854$, where d is the shorter and D the longer axis.

Elliptical Ring with long axes vertical. Let L S be half the longer and l s half the shorter axis, then $I = [(S \times L^3) - (s \times l^3)] \times 0{\cdot}7854$

Triangle. I = Base multiplied by cube of perpendicular height and divided by 36. The base is that side which is parallel to the neutral axis.

Sections of the forms given in the accompanying figures are also of common occurrence, and their moments of inertia are as follows :—

Fig. 1. $I = \frac{B\,D^3 - 2\,b\,d^3}{12}$

Fig. 2. $I = \frac{B\,D^3 + 2\,b\,d^3}{12}$

Figs. 3 and 4. $I = \frac{b\,d^3 + b'\,d'^3 - (b' - b)\,d''^3}{3}$

Fig. 5. $I = \frac{b\,d^3 - (b - k)\,(d - c)^3 + b'\,d'^3 - (b' - k)\,(d' - c')^3}{3}$

The moment of inertia is plainly independent of the material of which the beam consists, of the span, and of the manner in which the beam is supported or loaded, and is the same for all beams of a given cross section.

Having given this much explanation, we can proceed to work out an example. What deflection would be produced by a load of

10 tons at the middle of a rolled steel joist 15 ft. span, 12 in. deep, 5 in. wide, average thickness of flange ½ in., weight 30 lbs. per foot?

Our formula is $D = \frac{n\,w\,l^3}{E\,I}$ and here $n = \frac{1}{8}$, $w = 10 + \frac{5}{8}$ weight of joist. Weight of joist = 15 × 30 = 450 lbs.
$\frac{5}{8} \times 450 = 256$ lbs. = say 0·1 ton.
$\therefore$ $w = 10{\cdot}1$, $l = 180$, E = say, 15,000 tons.

$$I \text{ (fig. 1)} = \frac{(5 \times 12^3) - (2 \times 2{\cdot}3 \times 11^3)}{12}$$

$$\therefore\ D = \frac{\frac{1}{8} \times 10{\cdot}1 \times 180^3}{15{,}000 \times \frac{(5 \times 12^3) - (2 \times 2{\cdot}3 \times 11^3)}{12}}$$

$$= \frac{2 \times 10{\cdot}1 \times 180 \times 180 \times 180}{15{,}000 \times [(5 \times 12^3) - (2 \times 2{\cdot}3 \times 11^3)]}$$

$$= \frac{2 \times 10{\cdot}1 \times 18 \times 18 \times 6}{5 \times (8{,}640 - 6{,}122{\cdot}6)}$$

$$= \frac{20{\cdot}2 \times 1{,}944}{5 \times 2{,}517{\cdot}4}$$

$$= \frac{392{,}688}{125{,}870}$$

= (say) 3¼ in.

The load which we have given in the question is, of course, an extreme one for the beam described, and is merely assumed for the sake of illustration of the method of using the formula.

We will conclude the chapter with examples of the working of the two formulæ given for the strength of timber posts. What is the safe load for a fir story-post, 8 in. by 8 in. and 12 ft. high?

Our first formula is $S = a \times \frac{d^4}{L^2}$ and here $a = 15\frac{1}{2}$, $d = 8$, and $L = 12$.

$$\therefore\ S = \frac{31}{2} \times \frac{8^4}{12^2}$$

$$= \frac{31 \times 8 \times 8 \times 8 \times 8}{2 \times 12 \times 12}$$

$$= \frac{3{,}968}{9}$$

= 441 cwts.

For the sake of comparison we will work the same example by the other formula.

$$W = \frac{5{,}000}{1 + \left(\frac{l^2}{b^2} \times {\cdot}004\right)}$$

Here $l = 144$ and $b = 8$

$$\therefore W = \frac{5{,}000}{1 + \left(\frac{144^2}{8^2} \times {\cdot}004\right)}$$

$$= \frac{5{,}000}{1 + 1{\cdot}296}$$

$$= \frac{5{,}000}{2{\cdot}296}$$

This is the breaking load in pounds per square inch of area of the post, and, to compare with our previous result, where we found the safe load to be 441 cwts., we must put S and W into similar terms, thus :—

$$S = \frac{W \times 64}{10 \times 112}$$

$$= \frac{5{,}000 \times 64}{2{\cdot}296 \times 10 \times 112}$$

$$= \frac{20{,}000}{160{\cdot}72}$$

= 124 cwts.

Our safe load here is taken at $\frac{1}{10}$ of breaking load; the first formula, therefore, allows only about three times the safe load to the breaking load.

Correspondence.

To the Editor of THE BUILDER.

THE CALIFORNIA UNIVERSITY COMPETITION.

SIR,—The Royal Institute of British Architects has been desired by the Marquis of Salisbury to give publicity to the International Competition for the Phebe Hearst Architectural Plan of the University of California.

In consequence of this request I should esteem it a favour if you would give me the opportunity of stating in your columns that programmes of the competition, together with maps of the site, can be obtained on application to the Secretary of the Royal Institute of British Architects, and that further photographs and a plaster relief map of the site are on view in the library of the Royal Institute.

W. J. LOCKE, *Secretary.*
9, *Conduit-street, London, W.*

CLARE COLLEGE.

SIR,—I noticed in last week's issue of the *Builder* your correction to the title of Clare College which was affixed to my drawings. Through the kindness of the Master of Clare College I am able to justify that title and to give some particulars with regard to its former title of Clare Hall.

Quoting from his letter of February 8 :—"It is quite true that this college used to be known as Clare Hall, but on January 14, 1856, it was agreed that it should take the name of Clare College. There is no difference between a hall and a college at Cambridge, although there is at Oxford. In the original statutes given by our foundress in 1359 the foundation is generally spoken of as 'Domus de Clare,' but there are several papers in which it is referred to as 'collegium.' In the next set of statutes, sanctioned by Queen Elizabeth for us, the foundation is generally referred to as 'collegium.' There have been two sets of statutes sanctioned for this college during her present Majesty's reign, one in 1861 and the other in 1882. Each of these sets of statutes was formally designated by her Majesty in Council 'The Statutes of Clare College.' So that there can be no question that 'Clare College' is now our proper designation."

Perhaps you may find space to insert this.

T. TYRWHITT.

*** In Willis & Clark's great work, the "Architectural History of Cambridge," published in 1886, it is called throughout "Clare Hall" in the headings of chapters and pages, though we observe it is sometimes referred to in the text as "the College."—ED.

FILTRATION OF SEWAGE.

SIR,—May I suggest a simple improvement in filtering clarified sewage for purification by the bacterial process. It consists in screening off a space, say, 2 ft. wide from one end of the filter bed, into which space the clarified sewage is delivered. The filtering material or filtrate is filled in against the other side of the screen, so that the whole face of the filtrate is exposed to the fluid in the 2 ft. space. The fluid will then pass *uniformly* through the filtrate to the discharge outlets at its further end.

I need not dilate on the importance of this to effective purification.

F. WENTWORTH-SHEILDS, M.Inst.C.E.

THE OLDHAM BUILDERS AND UNION FOREMAN.

SIR,—I see in last week's issue of *The Builder*, that Mr. W. Cunliffe, Vice-President of the Lancashire Federation of Builders, in his speech at the annual dinner of the Oldham and District Builders' Association, says that they have a trouble to face by foremen being in the Union and that by them being in the Union, they did not look after their employer's rights. As a Union foreman I beg to differ from Mr. Cunliffe.

In the first place, if an employer picks out a man that he sees is industrious and sober to make a foreman of him, is that man to throw over the Society of which he is a member, and to which he has paid a weekly contribution, say, for a few years, to lose all monies paid and also all benefits, for the sake of being a foreman, for the small amount that he is going to receive above the journeyman? If he did so, and fell sick, would Mr. Cunliffe pay him sick pay? If he died, would he pay his representative his funeral benefit? I do not think he would. Then probably after he had completed his job, there might not be another ready for him, when he would have to turn journeyman again.

If he had left the Union, he would most probably join again, with increased entrance fees and contributions to pay, and less benefits to receive. If it has to be done, having the name of being a foreman is not worth it: for the extra work and study which is attached to the job. I would like to draw Mr. Cunliffe's attention to the fact that I think he would do better to make sure that the foremen are in the Union before he employs them. Then he will know that he has a mechanic; and, if he receives a testimonial from his late employer, that he has been a trustworthy servant and has done his duty; what more is required? If, on the other hand, he sees that the foreman is neglecting his duty and not looking after his employer's interest, then he has the remedy in his own hands.

Perhaps Mr. Cunliffe has not had the best that is on the market, if there is any *best*. But I imagine when he brings this serious question before the body of his brother builders they will not all take the same view as he does.

G. CARPENTER.

BOOKS RECEIVED.

ELEMENTARY PHYSICS: By John G. Kerr. (Blackie & Son.)

THE PRINCELY CHANDOS; A MEMOIR: By J. R. Robinson. Sampson Low & Co.

GENERAL BUILDING NEWS.

CHURCH, OSSETT.—On the 29th ult. the corner-stone of a new church at Gawthorpe Ossett was laid. The church will comprise a nave 61 ft. 6 in. by 22 ft., with north and south aisles, each 61 ft. 6 in. by 10 ft. 4 in. The aisles are divided from the nave by arcades of four arches each. The arches are double chamfered, and rest upon octagonal pillars with moulded caps. The chancel measures 29 ft. 9 in. by 22 ft. 6 in., and on the north side of it is an organ chamber 15 ft. by 12 ft.; on the south side vestries for the clergy 15 ft. by 10 ft. and choir 15 ft. by 11 ft. 6 in.. The building is being carried out from designs by Mr. Swindon Barber, late of Halifax, and by Mr. Tom H. Farrar, architect, Halifax.

CHURCH ROOM, ELY, GLAMORGAN.—The Bishop of Llandaff opened a new church room at Ely a few days ago. St. David's Parish-room, which is in the centre of the village, has been erected from plans by Messrs James & Sweet-Escott, and is capable of accommodating from 200 to 300 people.

BAPTIST SUNDAY SCHOOL, ELLAND EDGE, YORKSHIRE.—This building, which has been erected on the site of the old school premises, was opened recently. The altered premises contain on the ground floor an assembly-room, 53 ft. 3 in. by 29 ft. 6 in. and 22 ft. in height. Entering from the assembly-room are seven class-rooms, each 10 ft. wide, and ranging from 16 ft. to 12 ft. in length. The assembly-room is entered by the old doorway and a porch and vestibule, 5 ft. wide. It also communicates with the basement by means of a stone staircase. Here is a class-room, 33 ft. by 24 ft. and 12 ft. high, having a wood-block floor on a concrete bed. In the basement is also the kitchen and heating chamber. The buildings are heated by hot water on the low pressure system, and ventilation is secured by Boyle's patent ventilator on the ridge. The woodwork is of pitch-pine, stained and varnished. The work has been carried out under the superintendence of Mr. B. Stocks, architect, Huddersfield, by the following contractors:—Masons, Messrs. Tidswell, Bottomley & Holmes, Brighouse; joiner, Mr. Job Crowther, Brighouse; plumber, Mr. J. Marsden, Huddersfield; slater, Mr. W. E. Jowett, Huddersfield; plastering, Mr. C. Hutchinson, Elland; painting, Mr. A. Marshall, Rastrick; and heating, Messrs. T. A. Heaps & Co., Huddersfield.

WESLEYAN CHAPEL, RAMSGATE.—The new Wesleyan Chapel at St. Lawrence, Ramsgate, has just been opened. The architect is Mr. John Wills, of Derby and London, and the builders are Messrs. Martin & Son, of Ramsgate.

BAPTIST CHURCH, MONK'S PARK, NORTHAMPTON.—It is proposed to erect a new Baptist chapel on the Monk's Park Estate, Northampton. The plans for the new chapel have been prepared by the architects, Messrs. Mosley & Anderson, Northampton. The building will be of red brick with stone facings.

ADDITIONS, CARLISLE GRAMMAR SCHOOL.—A new School of Science has been built by the governors of this school. The buildings consist of a chemical laboratory, physical laboratory, chemical and physical class-rooms with preparation rooms, balance room, &c., and have cost 1,500*l*. Mr. G. D. Oliver was the architect, and the work was carried out by the following contractors:—Messrs. J. & R. Bell, builders; Mr. E. Musgrave, joiner; Mr. Whitfield, slater; Messrs. Ormerod & Sons, plasterers; Messrs. Graham & Crawford, plumbers; Messrs. Ling & Mark, painters, all of Carlisle; and Mr. Richardson, Darlington, heating apparatus.

SCHOOLROOM, ST. JOHN'S, WORCESTER.—A new schoolroom has been added to the schools at St. John's, providing nearly 100 places in the infants' department. An old room was pulled down, and a building, 45 ft. by 20 ft. 6 in., has been erected. The architect was Mr. A. B. Pinckney. The building is of red brick with Bath stone facings. The builder was Mr. Stephen Steel, of St. John's.

SCHOOL, FRIMLEY, SURREY.—A new infants' school has been erected in connexion with the National Schools, midway between Frimley-street and Frimley Green. The building has been erected from the design of Mr. Graham Awdry, of Westminster. It will accommodate about 100 children.

SCHOOLS, CARDIFF.—The new Lansdowne-road Schools, Cardiff, have just been opened. The boys' and girls' departments are contained in the northern block of the buildings, and the infants' department in the one-story block nearest the railway. Accommodation is provided for 456 boys, 456 girls, and 572 infants. The boys' and girls' departments, on the ground floor and first floor respectively, are similar in plan, there being two schoolrooms for 70 and one for 60 scholars in each, together with five class-rooms, varying in accommodation from 40 up to 60, all opening on to a wide corridor. Lavatory and cloak-room accommodation is provided, together with store-rooms and private rooms for the head teachers. The infants' department has two schoolrooms each for 110 scholars, three class-rooms for 60 and one for 72, and two babies' class-rooms for 50 each, with a similar corridor and cloak-room arrangement as in the other departments. Externally the buildings are in stone, having Newbridge stone and Maesycwmmer stone shoddy facings, with Bath stone dressings to the windows and angles. There is a caretaker's cottage on the site, and a cookery school, together with the usual play-sheds, out-offices, and boundary walls. The works have been carried out by Mr. George Rutter, of Barry. The

architects are Messrs. Veall and Sant, of Cardiff, and Mr. Charles Williams, also of Cardiff, has been clerk of works. The whole of the works, including playground formation and boundary walls, have been carried out at a cost of about 14,800*l.*

CONSTITUTIONAL CLUB, CLEVEDON, SOMERSETSHIRE.—New premises for the Clevedon Constitutional Club have just been erected. The building comprises a reading-room, a card-room, a billiard-room with two tables, a quoit ground, a skittle alley, stables, cyclists' accommodation, an assembly hall. It has been erected at a cost of 4,000*l.* by Messrs. Hill & Sons, builders, from the design of Mr. H. Taylor, C.E.

JUBILEE CLOCK TOWER, KINGSWOOD, NEAR BRISTOL.—A Jubilee Clock Tower is to be erected in the centre of Regent-street, Kingswood. The design is by Mr. J. Mackay, Kingswood. The height of the tower is 45 ft.

TEMPERANCE HOTEL, RUSSELL SQUARE, LONDON.—It is stated that a site has been secured in Russell-square, London, on which a temperance hotel, to cost 25,000*l.*, will be erected. Plans have been prepared by Mr. Creese Harrison, London.

CLUB HOUSE, CRABBS CROSS, REDDITCH.—A social club has been erected at Crabbs Cross by the Directors of the Enfield Cycle Company, Ltd., for their employés. At the end of the building is situated the concert hall, 40 ft. by 25 ft. Along the south side of the billiard-room and concert hall are the lavatories, &c., three bath-rooms, and two dressing-rooms. The cellar extends under the whole of the smoke-room, entrance-hall, and bar. The only upstair rooms are over the same rooms, and are for the use of the caretaker and manager. Under the far end of the concert hall are the engine-room and store-room. The work was commenced in July of last year by Messrs. Geo. Huins & Son, of Redditch, under the superintendence of Mr. C. G. Huins, architect, of Redditch.

THE RECONSTRUCTION OF ABERDEEN MUNICIPAL BUILDINGS.—A meeting of the Finance Committee of the Aberdeen Town Council was held on the 31st ult. The committee took up the consideration of the report and plans which had been prepared by Mr. R. G. Wilson, architect, with reference to the reconstruction of the Municipal Buildings. Two schemes were submitted, one involving a cost of 6,500*l.*, and the other of 8,000*l.* After the plans had been examined and the report gone into, it was remitted to a sub-committee to confer further with Mr. Wilson, and to get some further information as to how he proposed to carry out the scheme.

PUBLIC SLAUGHTER-HOUSE, ABERDEEN. — The Slaughter-house Committee of Aberdeen Town Council recommend as a site for the proposed Corporation slaughter-house a field at Kittybrewster, 8¾ acres in extent, acquired for the purpose about twenty-seven years ago, and of the capital value of 8,000*l.* The buildings which the Council has already agreed to erect, according to designs by Mr. W. Dyack, C.E., Borough Surveyor, are estimated to cost 30,000*l.* additional.

TOWN HALL, HOYLAKE, CHESHIRE.—The new Town Hall at Hoylake was opened on the 2nd inst. The council offices are all situated on the ground floor, and are approached from Market-street by a central entrance, consisting of a porch, laid with encaustic tiling. The council chamber, which measures 38 ft. by 22 ft., stands at the right of the main entrance. By means of pilasters the walls are formed into a series of panels, the lower portion having an oak dado. The whole of the furniture and mantels are oak, designed by the architect. Adjoining the council chamber are the medical officer's room, and the general waiting-room, whilst the clerk's, surveyor's, and accountant's departments are to be found on the left of the main entrance, provided with lavatory, strong room, &c. The public room, which is on the first floor, is approached by three entrances, two general entrances and one stage entrance. The main entrance is from Albert-road, and the staircase, the width of which is 7 ft., is provided with a ticket-office on the first landing. Accommodation for about 500 persons has been provided in the hall. The stage has been provided with a movable proscenium and other requisites for theatrical performances. Ladies' and gentlemen's dressing-rooms, lavatories, refreshment-rooms, promenades, and a caretaker's residence, are also provided in connexion with the hall. The remaining departments included in the scheme are the fire-station and the technical class-rooms, which were erected as a first section. As yet, the buildings are illuminated by means of gas; but provision has been made for the future introduction of electric light, and the wires have been laid throughout. Heat is supplied to the buildings by means of hot-water pipes, open fires, and a ventilating radiator. The general contract has been carried out by Mr. W. H. Forde, from the designs, and under the superintendence, of the architect, Mr. T. W. Cubbon, of Birkenhead, who was placed first in open competition. The total cost of the complete scheme has been about 6,500*l.*

A NEW THEATRE FOR DALSTON.—It is stated that a theatre is to be erected next to Dalston Junction-station. The architects are Messrs. Wylson & Long.

THEATRE, SWINDON.—A new theatre has just been opened at Swindon. The theatre—to be called the Queen's—has been built from the designs of Messrs. R. Milverton Drake and Pizey, architects, of Bristol. The building will accommodate about 1,600. The number of exits provided is nine for the auditorium and three for the stage. The principal elevations are facing Clarence-street and Groundwell-road, the materials being red brick, with freestone, and Reading rubber facings. Bar accommodation has been provided on each floor. The dimensions of the stage are—depth 35 ft., width 55 ft., height to grid 47 ft., width of proscenium opening 29 ft., height 26 ft. The contractor is Mr. Charles Williams, of New Swindon. The lighting and fire appliances have been supplied and fitted by Mr. A. S. Scull, of Bristol. The building is about 110 ft. by 90 ft. wide.

BUSINESS PREMISES, IPSWICH.—New business premises have been erected at the upper end of Fore-street, Ipswich, for Messrs. Martin & Newby. The buildings have been erected by Messrs. Thomas Parkington & Son, from the plans of Mr. T. W. Cotman, architect. The building consists of three stories.

HALL, IPSWICH SOCIAL SETTLEMENT.—Since the founding of the Social Settlement in Fore-street, Ipswich, about two years ago, various additions and alterations have been made to the premises. The hall, plans for which were prepared by Messrs. Eade & Johns, and carried out by Mr. E. Catchpole, is a building with a floor space capable of seating 650 persons, while there is in addition a platform recess and an organ chamber.

HOSPITAL, DUNOON, ARGYLLSHIRE.—The Victoria Hospital, which has been erected jointly by the Burgh Commissioners and the Cowal District Committee, at a cost of about 8,000*l.*, for the treatment of patients suffering from infectious diseases, was opened on the 2nd inst. The hospital consists of three pavilions, each containing two wards, while the administrative block is erected on a corner of the grounds. The architect was Mr. R. Bryden.

INSURANCE PREMISES, BRISTOL.—A new building in Clare-street, Bristol, has been erected for the Law Union and Crown Insurance Company. The building occupies a site at the junction of Clare-street and Marsh-street. The structure, of ground Box stone, consists of three floors and basement. Of the three entrances the chief one is that at the angle. All three doorways are fitted with gates of wrought-iron from the firm of Messrs. Singer, Frome. The Mansard roof and turret are covered with slates. The lighting will be by electricity, and the warming by hot water. The cost of the structure has been about 6,000*l.* The architect is Mr. Henry Williams, the builder is Mr. John Perrott, and Mr. W. Smith has done the carving.

VESTRY, WIDFORD CHURCH, HERTFORDSHIRE.—The old vestry on the north side of the chancel of this church having been transformed into an organ-chamber, a new vestry has been added in the north-west angle of the church. It was designed by Mr. Micklethwaite, London, and built by Mr. Glasscock, of Bishops Stortford.

NEW WING, ST. AGATHA'S SCHOOLS, LANDPORT.—A new wing has been added to St. Agatha's Schools, Frederick-street, Landport. The new building, which is intended as a girls' school, to accommodate some 240 children, is a two-storied erection in red brick. Mr. J. H. Ball, of London, is the architect. Messrs. W. R. Light & Son are the builders.

TECHNICAL SCHOOL, COLNE.—On the 7th inst., at the Colne Town Council's monthly meeting, Mr. Councillor Holmes, Chairman of the Technical Instruction Committee, stated that it was practically settled that the Technical School should now be undertaken with the Corporation's consent from amended plans submitted by Messrs. Woodhouse & Willoughby, Manchester, at a cost of 10,000*l.* The site selected was in Albert-road. He moved that the minutes be confirmed. Alderman Varley seconded, and it was adopted unanimously.

PROPOSED BAPTIST CHAPEL, HALES OWEN, WORCESTER.—It is proposed to erect a new Baptist Chapel at Hales Owen. Plans for the new chapel have been submitted by Mr. A. Harrison, architect, of Birmingham. The building is to seat 350 persons, and the present school accommodation will be doubled.

FOREIGN.

FRANCE.—M. Barrias, the sculptor, is to execute a model for a large frieze in ceramic work for the new palace on the Champs Elysées, which will run round the whole building, and will constitute a kind of representation of the history of art by means of portraits of great artists. The work is to be executed at the Sèvres manufactory.——The medal which the Société Centrale awards every year to the pupil of the Ecole des Beaux-Arts who, besides being "diplomé" by the Government, has obtained the largest number of prizes during the scholastic year, has this year been presented to M. Van Pelt, pupil of MM. Douillar and Deglane.——The Chamber of Deputies has unanimously adopted the decree for the suppression of the fortifications on the west and north of Paris, and it will shortly be submitted to the Senate. It is probable that the demolition of the fortifications will be commenced before the end of the year.——The "Ouest" Railway Company are about to make a new line called "Le Sud-Ouest," which will cross the lower Seine on a viaduct at Glos Montfort.——The exhibition of the Union Artistique of Toulouse will open on April 1, and that of the Société des Beaux-Arts of Dordogne will open at Perigueux on May 19. ——The Comte Delaborde is about to resign the duties of Perpetual Secretary of the Académie des Beaux-Arts, which he has exercised for twenty-five years. M. Delaborde, who is now 87 years of age, was a pupil of Paul Delaroche, and obtained a medal in the Salon of 1857. But at an early period he abandoned art for criticism, and was for a long time a contributor to the *Revue des Deux Mondes* and the *Gazette des Beaux-Arts*. He is the author of a good many books on artistic subjects, notably a History of Engraving, a study on the works of Ingres, and a History of the Académie des Beaux-Arts.——The death is announced, at the age of 55, of M. Malaval, one of the most esteemed architects of the Lyons district. He was collaborator with Clair-Tisseur for the churches of Saint Blandine and of the Bon Pasteur, and was architect also of the churches of Chasse and Givors, and of numerous restorations of ancient historic houses, &c.——The death is also announced of M. Charles Lebayle, who was much esteemed as a glass painter, and who has unhappily committed suicide at the age of 41. He was a pupil of Aimé Millet and of the Ecole des Beaux-Arts, and obtained the Prix de Rome in 1886.

PUBLIC WORKS IN NEW SOUTH WALES.—The roads, as main highways for traffic from Sydney, have, to a great extent, been superseded by the railways, but for a large portion of the colony they are still the sole means of communication, and as feeders to the railway system they play a very important part. In the interior a vast amount of work has been done in providing branch roads to the main arteries; roads between townships, and for access to the railway system; and routes for stock purposes. On many of these latter, in the dry parts of the far interior, a large sum has been expended in providing tanks and wells for supplying water to travelling stock, and during the past few years artesian bores have been put down for the same purpose in some of the driest regions with signal success. Owing to the nature of the soil, and the absence of suitable stone, the cost of road construction in not a few of the inland districts is exceedingly high, so much so that where there is any large amount of traffic it is found absolutely cheaper to construct light railways, which, in some instances, has been done, and will no doubt be continued on a much more extensive scale in future years. The bridges are constructed in a very substantial manner, timber being used wherever possible. The colony is fortunate in having an almost unlimited supply of hardwood eminently suitable for bridge work and structures of a like character. The ironbark which is mostly used for the purpose has a tensile strength of about one-third that of wrought-iron, whilst its durability may be gauged from the fact that some bridges, fifty years old, are still carrying traffic, whilst numbers of others, totally unprotected from the weather, have been built over thirty years. The operations of the Public Works Department include railway and tramway construction, improvement of harbours and rivers, bridges and road construction, repair and renewal; construction of public buildings; water conservation and irrigation, sewerage construction, &c. Among the larger undertakings of the Department is the Sydney sewerage system, which, in its present complete form, is of comparatively recent date, the works having been only commenced in 1880. Briefly described, the works consist of a main northern outfall sewer which collects the sewerage of the portion of Sydney and suburbs which naturally drains into Port Jackson, and discharges into the Pacific Ocean at a point about five miles to the south of Sydney Heads. The sewerage of the southern district is collected into a separate system and conveyed to a sewerage farm on the shores of Botany Bay. The scheme also comprises a system for the western suburbs, which also discharges on to the sewerage farm at Botany. In addition to the extensive reticulation works in connexion with the main scheme, numerous storm-water drains have been constructed where foul and insanitary creeks formerly existed. The amount expended on these works up to June 30, 1896, was 1,920,008*l.*, including a small expenditure on country sewerage. The effect which the construction of the sewers has had upon the health of Sydney has been most marked.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Edward Goldie, architect, has removed his offices from 10, Kensington-square, to 31, Upper Phillimore-place, Kensington, W.——Messrs. Thomas Potter & Sons, art metal workers, 44, South Molton-street, have purchased the business of Messrs De Wilde & Co., of 10 and 11, Archer-st., Shaftesbury-avenue; Mr. De Wilde has joined Messrs. Potter & Co., as superintendent of design for artistic work in wrought iron.

ELECTRIC LIGHTING, CARDIFF.—On the 30th ult. a Local Government Board inquiry was held at the Town Hall, Cardiff, by Mr. Herbert H. Law, in connexion with an application for sanction to borrow 29,500*l.* for the purposes of electric lighting, 2,809*l.* for street improvement, 520*l.* for the purchase of land for a branch library at Grangetown, and 180*l.* for the purposes of sanitary conveniences at

the Town Hall. Evidence was given by the Town Clerk (Mr. Wheatley), and the Borough Engineer (Mr. W. Harpur), amongst others.

WINDOW, TWYCROSS CHURCH.—A stained glass window has been erected in St. James's Church, Twycross, the subject being the "Adoration of the Magi," with the following inscription:—"In honour of God Incarnate made manifest to the Kings and Princes of the Gentiles, this window is dedicated by parishioners and friends in the sixtieth year of Queen Victoria's reign, A.D. 1897." The work was executed by Mr. Herbert Bryans, of London.

BRADFORD SOCIETY OF ARCHITECTS AND SURVEYORS.—The annual meeting and dinner of the members of the Bradford Society of Architects and Surveyors took place at the Great Northern (Victoria) Hotel on the 28th ult. Mr. James Ledingham presided, in the absence of the President (Mr. W. B. Woodhead). Mr. B. D. Fairbank was elected President for the ensuing year, and Mr. James Young hon. secretary and treasurer. After the loyal toasts the Vicar of Bradford proposed "Prosperity to the Bradford Society of Architects and Surveyors," and Mr. France responded. Other toasts followed.

PROPOSED CÆDMON MEMORIAL.—A meeting was recently held at the Whitby Urban District Council Chambers of the Cædmon Memorial Committee, when Canon Rawnsley presented the design for the Saxon cross which it is proposed to erect as a memorial of the great poet of Northumbria, in the churchyard of St. Mary's. This design has been prepared by Mr. Hodges, of Hexham. The design is based on the four fine specimens of Anglian crosses remaining of the time of Cædmon. These are the crosses of Bewcastle, Rothbury, Acca, and Ruthwell. The spirit of Saxon times is preserved in the design, which shows on one side in four panels Christ, David, Hilda, and Cædmon, and on the obverse a vine, within the spandrils of which are figures of the six bishops trained in Whitby Abbey, and St. Cuthbert and St. Bede. The two sides are covered with symbolical designs. The committee provisionally accepted the design, together with the estimate of the sculptors, Messrs. Beall, of Newcastle.—*Whitby Gazette.*

MASTER BUILDERS' ASSOCIATION, GRIMSBY.—The third annual dinner of the members of the Grimsby Master Builders' Association was held at the Ship Hotel on the 2nd inst. The President, Mr. A. Fuller James, and the Vice-President, Mr. Hewins, were unable to be present, and Mr. J. H. Thompson occupied the chair. The loyal and patriotic toasts having been honoured, the Mayor, Councillor J. Sutcliffe, proposed the toast of the evening, "The Grimsby Master Builders' Association." He said that their Association was formed for the advancement of their good and proper interests, and that their motto was defence rather than defiance. They found that the advantages which the workers under them had obtained by combination could also be applied in their interests. He was a believer in unions and combinations. He believed they did a great deal to promote the interests of those who were associated together, and they were not necessarily antagonistic to the well-being of the community at large; in fact, under a wise administration and sensible and proper treatment they did a great deal of good all round, not only to those immediately interested, but in the general welfare. He coupled with the toast the name of the secretary, Mr. Tonge.—Mr. Tonge, in response, said that their Association was formed in July, 1895, and their objects were fourfold. In the first place they desired to promote a better feeling between all the heads of the different trades and kindred trades in Grimsby; their second object was to obtain information relative to the building trade from all parts of the country, and to circulate it amongst the members of the trade in Grimsby; the third object of the Association was to obtain more equitable contracts between the builders and their employers, because it was notorious that the building contract was one of the hardest and most severe in existence; fourthly, and by no means lastly, their object was to deal with all disputes between masters and their operatives, and if possible to obviate strikes and lock-outs. With regard to the past year, it had been a most calm and quiet one. It had not been marred by any disputes whatever between the masters and the men, between the masters themselves, or between the masters and the Corporation, for there had been no prosecutions whatever for any breach of the by-laws. The past year had also been fairly flourishing. During the twelve months plans had been passed for 270 houses, 23 shops, 3 schools, and for 92 alterations and additions, making a grand total of 388. With regard to the coming year he would suggest that they should form a library of books dealing with matters of interest to the building trade, and they should also make a collection of catalogues and price-lists of goods and appliances used in the building trade. These books and price-lists and catalogues should be deposited in a central place easily accessible to the members of the Association. He would also invite the Association to watch, and also to follow the lead of the Sheffield Association, which had given notice that the members of that association would not sign any contract which contained a clause imposing penalties if the work was not finished at a given time. They had also given notice that they would not supply prices and specifications until they had received notification that their tender was a successful one.—The Chairman proposed the health of the Mayor and Corporation, and the Mayor responded. Mr. Rushforth submitted the toast of the engineers, architects, and surveyors. As to the architects, he believed they had infused a higher tone into their work of late. He coupled with the toast the names of Mr. Creswell, Mr. Bentley, and Mr. Rushton, all of whom responded. Other toasts followed.

MASTER BUILDERS' ASSOCIATION, NOTTINGHAM.—The annual dinner of the Nottingham Master Builders' Association took place on the 3rd inst., at the Albert Hotel, Derby-road. Mr. J. Wright (President of the Association) occupied the chair, and Mr. W. Edgar (vice-president) the vice-chair. The toast of "The Queen and the Royal Family" having been honoured, Mr. J. Woodsend submitted "The Mayor and Corporation of Nottingham." They, as an association of builders, appreciated all the good work that the Corporation did.—Councillor A. Pyatt, whose name was associated with the toast, responded. As to the question of a new town hall, he said, the spending of a quarter of a million required a good deal of consideration. They were all somewhat ashamed of the present building that stood in the Market-place, but a new one would come in good time.—The Chairman next proposed "Success to the Master Builders' Association." He congratulated the members upon the activity of the past year. Another source of congratulation was the fact that they had had very little trouble with the workmen during the past year. During the twelve months there had been no less than 108 meetings of the Association, at which minutes had been taken, in addition to many informal and conversational meetings on small matters. A cause for congratulation was that their membership had increased by ten during the past year, and they now numbered seventy-nine. The reference committee had had a series of questions affecting architects, or, rather, their own relation to architects. He was very happy to be able to state that they, as an association, were on satisfactory terms with the architects' association, and they had recently had a meeting with members of the architects' association, at which they put before them various points which they wanted them to consider in framing and drawing up future contracts, and the architects received them in a very cordial and business-like manner, and he had every reason to believe that in a short time they would have arranged a common form of contract which would be used in every architect's office in the city and by every builder in the town. This would save a lot of friction when contracts were signed. The President announced that a Midland Association had been formed for the Midlands. Referring to trades-unionism, the President said that if the demands of trades-unionism became too strong, it was very necessary they, as master builders, should be federated to resist them. Everybody recognised that during the past years trades-unionism had become much too aggressive, that it had made demands that they were bound to resist; and they could not have a better illustration of that than the great struggle which had just terminated in favour of the employers in the engineering trade. The trades-unionists proposed an universal federation of all the unions to fight their battles, but it seemed to him that they were a little short-sighted, because they would force the employers into a similar federation, and they would find that the relative position of both would be the same, and that capitalists would be as strong in proportion towards labour as they were before there were trades-unions. The limitation of apprenticeship was not only detrimental to the trade, but also to the community, for if everybody kept apprentices it would not only tend to break down the restrictions now put upon them, but by it they would be able to supply men in cases of emergency.—Mr. Henry Vickers and Mr. Frank Hodson responded to the toast. Mr. Vickers said that they, like the engineers, wanted to manage their own business; they did not want it to be done by the extreme leaders of trades-unionism. It was well known that instructions had been given to the men to get as much money as they could, and do as little as they could. That was a very unjust thing The Vice-President proposed "The Visitors," to which Mr. Starkey (Leicester) and Mr. Belcher replied; and Mr. F. Fish gave "The Chairman." The present Secretary of the Association is Mr. W. J. Barton.

MESSRS. YOUNG & MARTEN'S DINNER.—The fourth annual dinner of the heads of staff of the firm of Messrs Young & Marten, Caledonian Works, Stratford, took place at the Holborn Restaurant on the 29th ult., with Mr. H. H. Marten, proprietor, in the chair, and Mr. E. Montague Edwards, general manager, in the vice-chair. Mr. E. M. Edwards, vice-chairman, stated, in proposing the health of "The proprietor of the business, and success to the firm of Young and Marten," that the new stores, for which the contract had just been accepted, would cover a stocking area of four times the firm's present capacity, and would enable it to hold a largely increased stock, a very essential item in ensuring one of the points always sought for by the firm, which was promptitude. The chairman, in the course of his reply, said that it was expedient and desirable that they should meet thus once a year, not only to enjoy a social evening, but also to interchange ideas with regard to the progress of the business. Last year he had expressed the hope that 1897 would be a record year, and he was glad to say the volume of trade done justified that hope, as they had a considerable increase in their turnover. He also referred to the publication of their new catalogue, as likely to be of material assistance to the business in the course of the present year.

CHOIR STALLS, ST. PETER'S CHURCH, ABBEYDALE, SHEFFIELD.—New choir stalls have been erected in this church by Messrs. Jones & Willis, Birmingham, the work being superintended by Mr. Joseph Norton, architect, Sheffield. They comprise two prayer desks for the clergy, and seating for twenty boys on the front rows and twenty men on the back rows, these being raised one step.

STREET IMPROVEMENTS, HOVE.—On the 2nd inst. Mr. H. P. Boulnois, M.Inst.C.E., held an inquiry at the Hove Town Hall into the application of the Hove Urban District Council to the Local Government Board, for sanction to borrow 6,500*l.* for works of street improvement. Mr. C. A. Woolley (Solicitor to the Council) supported the application on their behalf, and the Town Clerk (Mr. H. Endacott), the Town Surveyor (Mr. H. H. Scott), and several members of the Council were also in attendance.

PULPIT, CHURCH OF ST. MARY, BICKINGTON, DEVONSHIRE.—A new oak pulpit has been placed in the Church of St. Mary, Bickington. It has been erected by Messrs. Harry Hems & Sons, of Exeter.

DEMAND FOR SURETIES FROM CONTRACTORS.—The Islington Board of Guardians received a letter from Messrs. Dove Bros., complaining that they were unable to tender for the erection of the new infirmary, owing to an objectionable item in the condition of contract, rendering it necessary to obtain two sureties of 500*l.* each. The chairman thought that, as the contract amounted to 150,000*l.*, it might not, as suggested by Messrs. Dove, be etiquette to ask for the sureties, and he would suggest that they should not be insisted upon, "unless required." Mr. Doherty hoped they would stick to the sureties, as a safeguard of the ratepayers' interests. Mr. W. H. Walkley said he would not vary the terms of the contract, or they would be told they had done so to serve the purposes of Messrs. Dove. The majority of the Guardians agreed with the views of the last speaker, though it was admitted that the reputation of Messrs. Dove stood high.

SURVEYORSHIP, ST. MARTIN-IN-THE-FIELDS.—A vacancy has occurred in the Surveyorship to the Vestry of St. Martin-in-the-Fields, owing to the present Surveyor, Mr. Chas. Mason, who has held the appointment for eight years, having accepted a partnership in the business of Messrs. Foster & Pearson, horticultural builders and heating engineers, of Beeston, Notts. Mr. Mason's resignation was accepted at the meeting of the Vestry on the 3rd inst. The question of appointing a successor has been referred to the Works Committee for consideration.

THE SANITARY INSTITUTE.—At an examination for inspectors of nuisances, held at Glasgow on February 4 and 5, the following seven candidates were certified as competent to discharge the duties of inspectors of nuisances:—R. P. Fleming, Dundee; J. Gilfeather, Dumfries; J. Irving, Motherwell; A. S. Macqueen, Linlithgow; J. McClement, Renfrew; A. Smith, Peterhead; Miss A. N. White, Edinburgh.

VENTILATION AND WARMING.—Messrs. Shorland & Brother (Manchester) ask us to mention that the Isolation Hospital for Chester, described in our last issue, is warmed and ventilated by means of their patent Manchester stoves with descending smoke flues, and their patent exhaust ventilators. The same firm have carried out the warming and ventilation on the same method, for the intermediate schools, Llandrindod Wells, also mentioned in our last issue.

MASTER BUILDERS' ASSOCIATION, BRISTOL.—The annual meeting of the Bristol Master Builders' Association was held a few days ago at the Guildhall, under the presidency of Mr. August Krauss. The Secretary, Mr. H. J. Spear, having read the annual report, Mr. G. Humphreys (treasurer) presented the audited accounts. The President moved the adoption of the report and accounts, and said they were pleased to know the building trade was good in Bristol last year, and, what was still better, they had no disputes with their men, for which both sides should be thankful. They had formed, that year, their West of England and South Wales Federation, which consisted of builders in Bath, Bridgwater, Cardiff, Newport, Taunton, Plymouth, and Weston-super-Mare. The Federation had been formed for the purpose of doing justice to their men and themselves. Should any differences arise they hoped they would be overcome without any strike, as strikes only meant a heavy loss and sufferings on both sides. The Federation had taken steps as regards the Employers' Liability Act, and had approached the architects to have a clause inserted in quantities similar to a fire insurance clause, so as to relieve the builders of heavy responsibility, and other Federations had also taken that step, which would certainly be favourably considered by the architects.—Mr. Downs seconded the resolution, and dwelt upon the importance of enrolling new members, and especially young men engaged in the building trade in Bristol. He was pleased to observe from the treasurer's account that the membership had been augmented considerably during the past year. The

resolution having been adopted, the President said it was with regret that he announced that their Vice-President, Mr. William Church, was unable to accept the office of President, in consequence of indisposition. Mr. G. Wilkins moved, "That the members assembled at the annual meeting of the Association desire to place on record their appreciation of the long and valued services of Mr. William Church, which had contributed to the success of the Association, and they deeply deplore the cause of his inability to undertake the duties of the presidential office, to which he was entitled during the ensuing year. They also express their fervent desire for his speedy restoration to health." Mr. C. A. Hayes seconded the resolution, which was carried by acclamation. Mr. Walters proposed, Mr. J. E. Jones seconded, and it was carried by acclamation, that Mr. August Krauss be re-elected President for the ensuing year. It was also agreed that the best thanks of the Association be tendered to Mr. Krauss for his attention to the work of the Association during the past year, and for the manner in which he had conducted the business. Mr. Krauss acknowledged the compliment paid to him, and promised to use his best endeavours in the interests of the Association. Mr. F. N. Cowlin was requested to accept the office of Vice-President of the Association, and he was cordially elected. Mr. A. S. Scull moved, and Mr. Podger seconded, that Mr. George Humphreys be re-elected Treasurer for the current year, and a vote of thanks was accorded to him for the time and labour which he had devoted to the finances of the Association, and more especially in connexion with the visit of the Master Builders' Association of Great Britain. The Executive Committee for the year was elected on the motion of Mr. C. Cowlin, seconded by Mr. Woodward, and, after a ballot had been taken, Messrs. Hayes, Downs, Wilkins, Scull, and Eastabrook were added to the committee.

CAPITAL AND LABOUR.

CARPENTERS' WAGES, BELFAST.—The builders of Belfast have received a notice from the Amalgamated Society of Carpenters and Joiners requesting an increase of wages for their members of ½d. per hour. They also desire work to be stopped at twelve o'clock on Saturdays, and a few other minor details as to outside work and overtime modified. This they desire to come into operation on May 1 next.

BRICKLAYERS' STRIKE, CROMER.—About seventy bricklayers at Cromer came out on strike in consequence of local builders refusing their demand for an extra 1d. per hour. Three months ago they gave notice that this course would be taken at the end of January if the increase was not granted. As the result of negotiations the matter was settled, and work has been resumed, the masters having agreed to an extra ½d. per hour, the men signing an agreement to be content with that sum for the next three years.

CARDIFF MASONS AND DRESSED STONE.—Some months ago a difficulty arose at Cardiff in connexion with the old question of dressed stone. Mr. W. Symonds had a contract for the erection of a new boundary wall of the workhouse, and purchased the dressed stone from Messrs. Turner & Sons, who have special facilities for turning out that class of work. Notwithstanding the fact that Messrs. Turner & Sons pay union wages, it was argued by Councillor Crossman, on behalf of the Masons' Society, that Mr. Symonds, who took the contract from the Corporation, was not carrying out the conditions of labour demanded by the society. The Corporation refused to take any action, but the dispute has been festering ever since, and about thirty-two men employed by Messrs. Turner, and forty men employed by Messrs. W. Thomas & Co., have left work.—*Western Mail.*

FEDERATION IN THE YORKSHIRE BUILDING TRADES.—For some time past the master builders of Yorkshire have had under their consideration the formation of a federation of employers engaged in all branches of the building trade, on similar lines to that which exists in Lancashire. The suggestion at first did not meet with complete approval, but there now can be no doubt of the permanent establishment of a strong combination of the masters. The increased demands of the men, and the success of the Employers' Federation in the recent engineering dispute, have made the master builders almost unanimous in determination to combine for mutual protection and interest, and it is said that time alone is required to complete the arrangements. While these arrangements are being carried out with a view to securing unity of action in future, the masters in Leeds are confronted by a batch of important demands from their employés for increased wages and improved conditions of labour. The operative plumbers have formulated the most important demands. They have tendered a six months' notice, which expires on June 1, for an increase in the rate of pay from 8d. to 9d. per hour, and for the alteration of the rules relating to the number of apprentices, work on out-jobs, and the hours of work in winter. At present there is no restriction placed on the number of apprentices, but the men's union now desire to put some limitation on the number, similar to that in force in many other trades. In regard to hours, the men wish to have a nine-hours day in winter, instead of being stopped, as at present, at half-past four and five o'clock. The plasterers have asked for an additional penny per hour, and for several minor concessions. It is understood that the Master Builders' Association offered the men an increase of a halfpenny, but as this was declined, the employers have now withdrawn the offer. The joiners have given the customary notice, which will terminate on May 1, asking for an increase from 8½d. to 9d. per hour. As yet, however, the demand has not been considered by the employers. The masons are also seeking a similar increase, and practically the only workmen in the building trade who have not asked for an advance are the bricklayers. Several meetings of the employers are to be held shortly to consider the requests, but it is highly improbable that all the demands will be conceded. It is stated that a disposition exists on the part of the masters to give the labourers an advance, though it is not definitely known that the feeling is anything like unanimous. —*Leeds Mercury.*

BUILDING TRADE DISPUTE, CHELTENHAM.—When in May, 1896, the dispute between the masons, carpenters and joiners, plumbers and plasterers, and the master builders in Cheltenham came to an end and a code of working rules was adopted by which their future conduct should be governed, one of the rules had reference to the question of working hours. Under that rule it was agreed that the employés should work from March 1 to October 31 inclusive from 6 a.m. to 5.30 p.m. on each of the first five working days of the week, with 1½ hours allowed for meals, and on Saturdays from 6 a.m. to 1 p.m. with half an hour allowed; during the months of November and February from 7 a.m. to 5 p.m. with 1½ hours allowed; and during December and January from 7.30 to 4.30 with one hour allowed. A similar rule was inserted in the code adopted for the guidance of the other branches of the building trade, notably the bricklayers and the labourers, in the settlement of their dispute last May. The working of this rule during the present winter months has not been an unmitigated blessing either to employers or employed, for the reason that owing to oversight on the part of the gentlemen who drafted the rule they did not insert therein the hours at which the men should have their meals. The consequence is that the men and their employers, placing different constructions upon the meaning or intention of the rule, are now at loggerheads, and some of the men have struck work. The dispute which has lead to this stoppage of work is entirely centred upon the breakfast half-hour.—*Cheltenham Chronicle.*

LEGAL.

THE LONDON BUILDING ACT, 1894:

WATSON *v.* PAYNTER.

THIS case—a report of which appeared in the *Builder* of January 15, page 57—was further discussed before Mr. Hannay at Marlborough-street Police-court on January 14.

At a further hearing on January 20, plans were put in of the previously existing domestic buildings occupying this site, which plans had been certified by the District Surveyor under Section 43 (1), and also the plans of the intended new building; evidence was given that while no more land at the rear in the basement would be occupied by the intended new buildings than was occupied by the previously existing domestic buildings, certain deviations would be made in the upper part of the new buildings from the plans as certified; and further plans were put in, showing such deviations on each of the several floors, and a sectional drawing showing deviations in the height of the building in its several parts.

On the 3rd inst. Mr. Hannay gave his decision as follows, viz.:—

"I have come to the conclusion, which I certainly do very much against my will, that the objection of the District Surveyor must prevail, and that I must affirm it. I don't know whether you require me to go minutely into the various points. But I may state generally that I consider a deviation may be in any respect, for if a deviation from the plan or plans as certified by the District Surveyor is any deviation at all, then it brings them within the sub-Section (ii.) of the 43rd Section of the Act. I do not see how it is possible for me, as a matter of fact, to say that these plans do not deviate. I consider it clear that there has been a deviation, and that I have been called upon to make an order. I am of opinion that I must affirm that the District Surveyor is right, and that the new buildings cannot be raised to a greater height than previously without the consent of the County Council. I do not feel confidence in my opinion. I shall feel satisfied if it is upset by the Court above

Ten guineas costs allowed.

TANNER *v.* DREW AND CADMAN.

THIS case, which related to the application of Sub-section 2, Section 74, of the London Building Act, 1894, to the internal rearrangement and alteration of a building, was heard before Mr. Dickenson, at the Thames Police-court, on January 28 last, and his decision thereon was delivered on the 4th inst.

The case was brought by Mr. A. W. Tanner, District Surveyor of St. George-in-the-East, against Messrs. Drew & Cadman, contractors. The defendants were engaged to carry out certain alterations to a public-house known as the King's Head Distillery, in Commercial-road, which alterations were considered by the building owners to be of a simple character, inasmuch as very little work was to be done to the external walls, and no change whatever was to be made in the cubical contents of the building. The public bars, however, were to be increased by taking in part of the premises before comprised in the dwelling house part.

The King's Head, an old building, stands at the corner of two streets. The area of the house exceeds ten squares. At the end of the building next the side street was the kitchen, on the ground floor, and adjoining the kitchen was the private bar. The kitchen was to be removed entirely and the bar space increased by taking in part of the area formerly kitchen; the remaining area formerly kitchen was to be formed into a new passage (with new doorway from the side street), giving access to the existing staircase leading to the dwelling-house portion above. An entirely new partition was to be built dividing this passage from the enlarged public bar, with a communication door in same. The District Surveyor contended that this partition should be constructed throughout of fire-resisting materials—*i.e.*, should be a brick wall with a fire-resisting door in it instead of a wood partition, as the builders proposed. To this requisition the defendants objected.

Mr. Seager Berry, of the London County Council, appeared for the District Surveyor, and Mr. Percy Gates for the defendants.

Mr. Percy Gates contended that no material alteration was contemplated to any external wall, that the character of the building was not to be altered in the slightest way, and that a mere matter of internal arrangement involving no constructional work was not sufficient to bring the building under the regulations of Section 74, sub-Section 2. He adduced the case of Marsland *v.* Tyerman (reported in the *Builder* of April 17, 1897), as supporting his view, and also the case of Scott *v.* Legg, 10 Q.B.D. 236; he further urged that the work was necessary repair within Badger *v.* Denn. 22 J.P. 129; and also that Section 209 of the London Building Act, 1894, only applied to alterations, &c., made to buildings erected since January 1, 1895.

Mr. Seager Berry urged that Scott *v.* Legg had no application to the present case, by reason that it was merely a decision under the 1855 Act as to what constituted "an addition" or "uniting," and that that case had also been covered by new words in Sections 75 and 207 of the 1894 Act. He pointed out that the partition was entirely new work, and formed a separation of the trade portion from the dwelling-house portion of the house, and also was an enclosure of a new approach to the dwelling-house portion, and so doubly within Section 74 (2) by reason of Section 209; that the work was not necessary repair, as it was not repair at all, but re-arrangement, and that it was clear from the use of the words "a building" and "new buildings" in Section 209, and from Section 210, that Section 209 made alterations in old buildings to the extent of such alterations subject to the 1894 Act, and he quoted Crow *v.* Redhouse, 59 J.P. 551 and 663, in support of the last contention.

The Magistrate expressed some surprise that a matter so important as this had not already been authoritatively settled by the High Court, but it appeared that no case had been appealed during the three years the Act has been in operation.

Mr. Dickenson delivered a considered judgment, in which, after stating the facts, the Magistrate said: The whole point is whether the partition in question should be of wood, as proposed by the defendants, or of brick. Mr. Berry relies on Section 74 of the 1894 Act, sub-Section 2 [Magistrate read sub-Section]; that is a new provision and comes into operation, so it is said by Sections 207 and 209. Before commenting on these sections I will read Section 210, which is as follows [Magistrate read section]. Therefore by Section 210, until altered, the house could not be objected to. Then comes Section 207 [Magistrate read it]. Then Section 209, in which the material words are: "Any work done for any purpose in any building (except that of necessary repair not affecting the construction of any external or party wall) shall, so far as regards such work be subject to the provisions of this Act." That is, if you are making alterations, the new work shall be in accordance with the Act, so far as it relates to new work.

This is a building erected before January 1, 1895; and as it stood, by Section 210 is deemed in conformity with the 1894 Act, but alterations have been made, and by Section 207 such alterations are subject to the 1894 Act, *i.e.*, in this case, Section 74 (2). That being so, one question Mr. Gates raised was "necessary repair." Now repair must be to something original. This partition is new and did not exist before. To repair does not mean to erect for the first time. I have no doubt this is not necessary repair. Mr. Gates also relied on Scott *v.* Legg, but I fail to see how that case applies. The question there was whether an addition of a new portion to an old building was within Section 28 of the 1855 Act; in any case, it does not get over the words "any work done in a building," in Section 209 of

the 1894 Act. So far as it goes, the case really supports the District Surveyor's contention, for in that case Lord James, in his judgment, says: "In order not to harass the proprietor of any old buildings or manufactories, the Act went on to say that it should be lawful for them to make any addition, alteration, or other works to their old building, but with this proviso and this proviso only, that to the extent of such alteration, addition, or work, the same should be subject to the regulations of this Act;" *i.e.*, anything new is subject to the Act. Lord Baggallay also says, "Any addition to any old building shall to the extent of such addition be subject to the regulations of this Act." In Scott *v.* Legg they were merely dealing with an addition. Lord Bramwell also observes that "it was intended to leave owners of old buildings unfettered by the Buildings Act except by the powers specially provided." An old building is not touched, but any addition is; any addition must be in conformity with the provisions of the new law; any alteration must be in such conformity; any work done in the building must be in such conformity. I agree with Mr. Gates that Badger *v.* Denn goes to show that a building owner is not to be worried by requirements where no public good is gained, but where a public good is aimed at, such as protection from fire, it is quite clear that it is the duty of the District Surveyor to see that the Act is carried out. This partition, therefore, which separates the trade portion from the dwelling-house portion of this building must in my view be of fire-resisting material.

An order was made to comply with the District Surveyor's notice of irregularity, and *2l.* 2s. costs.

MEETINGS.

FRIDAY, FEBRUARY 11.

Royal Institution.—Dr. J. H. Gladstone on "The Metals used by the Great Nations of Antiquity." 9 p.m.

Institution of Mechanical Engineers.—Annual general meeting (concluded). 7.30 p.m.

SATURDAY, FEBRUARY 12.

Edinburgh Architectural Association. — Visit (1) to the Prudential Assurance Buildings, St. Andrew-street; (2) Edinburgh Stock Exchange, St. Andrew-square; (3) Jenner's Buildings, Princes-street.

MONDAY, FEBRUARY 14.

Royal Academy of Arts (Lectures on Architecture).—Professor Aitchison, R.A., on "The Italian Renaissance." V. 4 p.m.

Society of Arts (*Cantor Lectures*).—Mr. Hugh Stannus on "The Principles of Design in Form." I. 8 p.m.

Clerks of Works Association.—Fifteenth annual dinner, King's Hall, Holborn Restaurant. 6.30 p.m.

London Institution.—Professor J. Milne on "Geological Changes Beneath the Ocean." 5 p.m.

Bristol Society of Architects.—Mr. M. Aston Green on "Some Ancient Roman Buildings." 8 p.m.

TUESDAY, FEBRUARY 15.

Institution of Civil Engineers.—Mr. P. M. Crosthwaite on "The Stability of Channels through Sandy Estuaries." 8 p.m.

WEDNESDAY, FEBRUARY 16.

British Archæological Association.—Rev. W. S. Lach-Szyrma, M.A., on "Australian Lights on the Later Stone Age in Britain." 8 p.m.

Builders' Foremen and Clerks of Works Institution.—Ordinary meeting of the members. 8 p.m.

Society of Arts.—Mr. J. F. Iselin, M.A., on "The Protection of Industrial Property." 8 p.m.

St. Paul's Ecclesiological Society.—Mr. Joseph Grimshire on "Some Cathedrals of Northern Spain, especially those of Toledo and Burgos," illustrated by lime-light views. 7.30 p.m.

Edinburgh Architectural Society.—Mr. J. E. Forbes on "Normandy." 8 p.m.

Northern Architectural Association. — Mr. Ralph Hedley on "Architectural Modelling." 7.30 p.m.

THURSDAY, FEBRUARY 17.

Royal Academy of Arts (Lectures on Architecture).—Professor Aitchison, R.A., on "The Italian Renaissance." VI. 4 p.m.

Society of Antiquaries.—8.30 p.m.

Royal Institution.—Dr. Jean Paul Richter on "Some Pictures at the National Gallery." II. 3 p.m.

Institution of Civil Engineers.—Students' Visit to the London and North-Western Railway Goods Warehouse, Broad-street Station. Assemble at the entrance to the Works in Finsbury-avenue. 2 p.m.

FRIDAY, FEBRUARY 18.

Incorporated Association of Municipal and County Engineers.—Metropolitan District meeting, to be held at the Offices of the Institution of Civil Engineers, Westminster. 7.30 p.m.

SATURDAY, FEBRUARY 19.

Architectural Association of Ireland.—Special Visit to the Science and Art Museum, Kildare-street. 2.30 p.m.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until March 10.

[1896] 28,025.—AN INSTRUMENT FOR TAKING AND PLOTTING LEVELS IN A CONTINUOUS SECTION: *Colonel Fraser, R.E.* (*retired*).—Two parallel perambulator wheels connected at their centres by a bar, move a style attached to the middle of a straight rod in a fixed direction and at a constant rate, whilst the rod and style are given a separate downward movement along the direction of an arm inclined to the rod, by means of an integrating mechanism, the style repeats upon a sheet of paper behind it the curve to any reduced scale desired, from the pole of the instrument, which is kept vertical by an inertia pendulum; along level ground the inclined movement of the bar carrying the tracing style and its horizontal motion are so proportioned that the style draws a vertical line; on rising or falling ground a cam on the pendulum alters the position of a disc in frictional contact with and driven by a cone which in turn receives its motion from the perambulator wheel—thus the bar's inclined movement is accelerated or retarded, and the pencil deviates from the vertical line indicating the incline or decline of the ground.

This instrument is based upon the principle of the differential calculus, that where ψ=angle between the radius vector of a curve at the point whose polar co-ordinates are r and θ, and the tangent to the curve at that point, then $Cos.\ \psi = \frac{dr}{ds}$; that is, when the arc S is increasing at the rate ds, the rate of increase of the radius vector is $dr = Cos.\ \psi\ ds$. The wheel's path on the ground is treated as a curve whose length the wheel measures, and when the style receives a transverse motion in proportion to the distance run and a directed motion in the line of the radius vector proportional to the inclination of the radius vector to the tangent of the curve of the ground at each instant of time, the natural section of the ground appears, to a reduced scale, on the paper. When the paper's lower edge is reached, style and paper are carried up and reset to make the section continuous.

[1897] 654.—PURIFYING WATER, SEWAGE, AND OTHER FOUL LIQUIDS BY BACTERIAL ACTION: *Colonel Ducat, late R.E.*—To ensure continuous aëration by natural means of a continuously acting filter bed, the inventor constructs the sides of the structure containing the filtering medium of open work in the form of gratings, honeycombed brickwork, tiles, perforated metal, or the like, giving access for ambient air to the filtering medium; the apertured sides have an upward inclination from within.

801.—HANGING AND OTHER LOCKS: *Bates & Dowd.*—For locking with or without a key, a hook and bolt are contrived—the hook being at back of the lock, the bolt extending beyond the lock's rim; the extension is used for locking purposes when pressed in; for sunk hasps a projecting stump on the bolt goes through a slot in the back of the lock which comes up to the hook.

1,299. — SHEET-IRON CORRUGATED ROOFINGS: *C. Erlinghagen.*—These are bent at their joining points so as to form stairs to keep out rain and snow, and to allow expansion by warmth; the sheets are transversely bent in opposite directions at their two ends, and fixed by clasps engaging beneath the roof-beams.

2,426.—DOOR, WINDOW, AND OTHER FASTENER: *R. Grimmer.*—The bolt carrier has a screw-threaded periphery working in an internally screw-threaded casing or ring, so that the bolt when turned engages with the door or window.

2,667.—PRESERVATIVE PAINTS, PIGMENTS, VARNISH, &c.: *F. Fritsche & Co.*—An amount, from 2 to 5 per cent., of metanitroparacresol is added to the oxides of metals (copper, lead, zinc, mercury, &c.) during the grinding, or it may be combined first with the metals, and the metallic compounds may be added to the paint, varnish, or lacquer.

2,834.—LAVATORIES, BATHS, SINKS, &c.: *J. Shanks.*—A discharge valve is arranged to close down on a seal below a metal or earthenware grating in the vessel's outlet, the valve being attached to an arm on a vertical rod extending (*a*) up through the overflow passage, or (*b*) downwards through a trap in the discharge pipe; the invention includes a discharge outlet in a depressed part or well of the vessel, and the extension of the pipe upwards into such well, where it is covered by a syphonal piece between which and the well-sides is a small annular space into which the bell-shaped valve dips.

3,361.—BRAZING OR SOLDERING HEARTHS: *Judge & Hunt.*—With the hearth is combined a removable cover or roof which may be lifted at will, thus free access to the fire is obtained; the cover can be supported by chains passing over pulleys; the contrivance is especially adapted for tube-soldering.

6,525.—ARTIFICIAL STONE: *G. Christie.*—The invention lies in mixing the ingredients with just enough liquid to allow them to be moulded, and at once turning the moulded mass out and spraying it with water, steam, or the like, in a light fleecy cloud by a fine spray diffuser; the block absorbs the water more easily, and without injury to its shape.

14,064.—SLABS FOR COVERING WALLS: *T. Krah.*—These are made of glass, with hooks at the back for their attachment by mortar, cement, or other manner.

16,056.—WALL PLASTERING: *G. W. Meserve.*—Perforated metal strips are used, firmly secured to the furring strip bent to an angle; metal guide strips are secured by an angle plate nailed to the wall, a T-shaped piece stamped from the angle plate and bent at 90 deg. to form a button for interlocking with an aperture in the strip; for caps, corbels, &c. and for new walls to existing walls, perforated strips are bent in length to a right angle.

24,978.—FIREPROOF CLOTH: *Bancrofts.*—For use in gunpowder or explosive works, in gasworks and the like, the cloth is glazed or finished on its outer surface, it has a woollen weft and a worsted warp, and is dipped in a mixture of tungstate of soda (20 per cent.), phosphate of soda (10 per cent.), and water (70 per cent.).

27,884.—ROOFING: *R. Glendinning.*—This consists of layers or sheets composed of tar, pitch, resin and Trinidad asphalte.

29,726.—ELECTRICAL HEATING DEVICES: *F. Le Roy.*—The inventor uses a rod of high specific resistance, its heat being utilised by direct radiation; the rod is entirely unexposed to the chemical action of the surrounding medium, and is made, preferably, of silicon placed in a tube or cover, preferably of glass, in which a vacuum is formed. Whilst following the formula $R = r\frac{l}{s}$, the inventor claims to have found that Joule's law does not give a perfectly exact equivalent of the quantity of heat developed in a conductor. "I have ascertained," he says, "that the quantity of heat is not simply proportionate to the specific resistance of such body, but varies according to the specific heat of the body and also according to the chemical action produced by the passage of the current, as *e.g.* oxidation." He, therefore, employs a body of great specific resistance (r), which enables the length (l) of the conductor to be decreased and its section (s) increased.

NEW APPLICATIONS.

For week ending January 29.

1,831, J. Bousfield, Grooved Rails for Sliding Doors. 1,841, J. Macdonald, a Tool-handle Rivet. 1,855, A. Gray, Telegraph Cable Grip. 1,872, E. Rosa, Curve Tracer of Electrical Measurements. 1,875, E. Edwards, Down-draught Kilns for Burning Bricks, Clay, &c. 1,883, Otis Bros. & Co., Elevators and Lifts. 1,889, Watts & Poston, a Water Movement. 1,910, J. Jones, Syphon-flushing Devices. 1,917, J. Deussen, Tubes. 1,924, J. Walker, Chimney-pots and Ventilating Terminals. 1,932, A. T. Chorley, Sanitary Pipe Traps. 1,941, G. Weaver, Appliance for Cleansing Roads. 1,948, T. H. Stubbs, Tiles and other Ceramic Ware (with coloured designs therein). 1,954, J. Waller, a Burglar Alarm Bolt. 1,959, G. Pilkington, Brazeless Joints. 1,964, E. Beckton, a Detachable Keyed Line Carrier for Window Sashes. 1,966, J. Gammie, Window Frames and Sashes. 1,970, J. G. Dixon, an Electric Switch or Contact Maker. 1,976, Wilson & Nichols, Smoke Cures and Ventilators. 1,982, G. Waller, Metal Doors, Covers, &c., for Inspection Chambers and other Sanitary Appliances. 1,990, Humpage & Jacques, Lathes. 2,000, L. Delâtre, Measuring Apparatus. 2,003, L. A. Garchey, Ceramic Stone. 2,011, Botterill & Wells, for Operating the Safety Gates of Hoists and Lifts. 2,018, J. G. Lorrain, a Composition for Building and Decorative Purposes. 2,026, M. Saccardo, Tunnel Ventilation. 2,032-3, J. Pusey, Wrenches and Parallel Pliers. 2,041, J. Boss, Paving and Pavements. 2,046, J. Simpson, Automatic Bath Discharge-valve. 2,061, J. Hannan, and 2,146, Havilands & Farmer, Grain and other Elevators and Dischargers. 2,062, G. E. Bergman, Printing of Plans and Drawings. 2,080, A. W. Trenchard, a Cone Chimney-pot. 2,085, H. M. Hufeland, a Contrivance to Render Windows Draught-proof. 2,087, T. Rees, Door, Gate, and other Fasteners. 2,089, O. Frommann, Automatic Opening and Shutting of Doors. 2,097, J. Carter, "Closure Brick Flemish Bond Brickwork." 2,116, W. Reed, Venetian and Similar Blinds. 2,142, Glashüttenwerke Alderhütten Actien Gesellschaft, Hollow Glass Blocks for Construction of Walls pervious to Light. 2,143, B. Baden-Powell, Locks or Fastenings. 2,144, A. Winton, Lever Hoist. 2,149, G. Stubbs, Automatic Gas Disconnector. 2,150, Lucas & Done, an Oil-can. 2,152, T. Smith, Hinges. 2,153, J. Hutchison, Ventilators for Drain-traps, &c. 2,159, Cryer & Baker, Domestic Fire-Places. 2,169, Beech & Melhuish, Gas Cooking and Heating Stoves. 2,181, O. Wanke, a Bridle or Cover for Paint and Similar Brushes. 2,182, P. Lehmann, a Wall and Roof Covering Material. 2,186, Ayre and Others, Pottery Kilns or Ovens. 2,187, W. Defries, Filters. 2,206, P. Grosser, A Key-Hole Cover. 2,213, R. Rimmer, Tube and Rod Connexions. 2,214, G. Hurlbert, Closet Flushing. 2,217, E. Segalli, Self-Closing Valves or Cocks. 2,218, A. Mazzoni, Kilns. 2,222, W. Potter, Mortising Chisels. 2,236, W. R. Cooney, Sun-Blinds. 2,237, T. L. Thornton, Pipe-Joints. 2,247, J. Hargeaves, Open and Close Ranges and Ovens. 2,255, W. Wright, for Seasoning Timber. 2,257, T. Cooper, Ventilating Rooms, Spaces, Mines, &c. 2,272, J. W. Buckley, Fastenings for Brush Handles. 2,282, J. R. Mally, Mouldings. 2,302, W. R. McKay, for Hanging Doors, &c. 2,318, T. L. Mudge, and 2,350, J. Wade, Sash Fasteners. 2,321, Jones and Dommersnas, Scroll Saws. 2,328, Redwood & De Hailes, for Fire-Proofing Wood and Other Materials. 2,331, T. Guttridge, Bricks. 2,339, T. Dowman Door-Locks. 2,345, Parry & Payne, a Convertible Bench Cover. 2,353, W. S. Petty, a Combined Cinder Sifter and Ashes Pan for Domestic Fire Ranges. 2,357, J. Burnett, Baths. 2,373, J. C. Black, Flanged Pipe Joints. 2,392, A. G. Hopper, for Preparing Casting Moulds. 2,393, E. Taylor, a Tool for Forming the Junctions of Tubing with their Sockets. 2,395, Nobes and Tilley, Automatic Gas Disconnector in Case of Fire. 2,404, W. H. Gardam, Reversible Sliding Windows. 2,418, Munro & Proctor, Earthenware Traps or Gullies. 2,419, W. S. Simpson, a Saw or Rasp. 2,429, Liston & Denman, a Window Fastener with Appliance for Operating the same.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 27.—By STIMSON & SONS.

King's Cross.—47, Albion-st., u.t. 46½ yrs., g.r. 8*l.*, r. 42*l.*	£430
Barnsbury.—34, Albion-grove, u.t. 46½ yrs., g.r. 8*l.*, r. 38*l.*	320
Mile End,—43 and 44, Alma-rd., f.	560
177, Bow Common-lane, u.t. 76½ yrs., g.r. 4*l.*	235
Holloway.—688, 690, 692, and 694, Holloway-rd., u.t. 60 yrs., g.r. 42*l.*, r. 225*l.*	1,630
Old Kent-rd.—76 and 78, Trafalgar-rd., ut. 34½ yrs., g.r. 4*l.* 8s., r. 72*l.*	710
Brixton.—28, Stockwell Park-cres., u.t. 27½ yrs., g.r. 9*l.*, e.r. 50*l.*	215
Balham.—110, Bedford Hill, u.t. 78 yrs., g.r. 14*l.* 14s., e.r. 50*l.*	260
120, Fernlea-rd., u.t. 76 yrs., g.r. 6*l.* 6s., e.r. 30*l.*	225
Charlton, Kent.—6, Maryon-rd., u.t. 31 yrs., g.r. 4*l.*, r. 26*l.*	250
Homerton.—53, Holmbrook-st., u.t. 28 yrs., g.r. 2*l.* 5s.	110
Balham.—66, Rossiter-rd., u.t. 76 yrs, g.r. 9*l.* 9s., e.r, 36*l.*	250
90, 100, and 102, Fernlea-rd., u.t. 76 yrs., g.r. 18*l.* 18s, r. 88*l.*	640
10, Byrne-rd., u.t. 77 yrs., g.r. 10*l.* 10s., r. 36*l.*	335
Tooting.—155 and 157, Trinity-rd., u.t. 82 yrs., g.r. 25*l.*, e.r. 100*l.*	305
Wimbledon.—204 and 206, Merton-rd., u.t. 82 yrs., g.r. 15*l.*, r. 60*l.*	405

By TOOTH & TOOTH (on the premises).

St. John's Wood.—42, Queen's-rd., u.t. 39 yrs., g r. 30*l.*, e.r. 85*l.*	300

By HENRY HENDRIKS (at Birmingham).

Birmingham.—Cambridge-st., &c., l.g.r. 508*l.* 9s., u.t. 22 yrs., g.r. 228*l.* 12s. 6d., with reversions	3,050

By NOTT & CARTWRIGHT (at Balham).

Tooting.—Bickersteth-rd., a freehold building plot	300
Wimbledon.—11, 15, 17, and 19, Trinity-villas, u.t. 98 yrs., g.r. 32*l.*, e.r. 160*l.*	1,830

By J. H. BETHELL (at East Ham).

Manor Park.—Church-rd., &c., 80 plots of building land	6,203

January 28.—By WYATT & SON (at Emsworth).

Emsworth, Hants.—Havant-rd., "Western Villa," f.	900

By PERKINS & SON (at Southampton).

King's Somborne, Hants.—"Place Farm," 80 a. 2 r. 18 p., f.	4,450

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
Public Baths	Winchester T.C.	25*l.* and 15*l.* premiums	Feb. 28

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Making-up, Paving, Metalling Road	Watford U.D.C.	Engineer's Office, 14, High-street, Watford	Feb. 15
Additions "Station" Hotel, Inverness, N.B.	Highland Ry. Co.	Ross & Macbeth, Archts. Queen's-gate Chambers, Inverness	do.
Machine Works and Buildings, Fenton-road, King-cross, Halifax	.....	T. L. Patchett, Archt. George-street Chambers, Halifax	do.
Granite (5,000 tons)	Chesterton (Cambs.) R.D.C.	J. Dunn, Surv. 6, North-terrace, Cambridge	do.
*Works and Materials	Tottenham U.D.C.	712, High-rd. Tottenham	do.
Sewerage Works, Albert-street, &c.	Edinburgh Corp.	Burgh Engr. 1, Parliament-square, Edinburgh	Feb. 16
Sewerage Works	Ham (Surrey) U.D.C.	W. Warner, Kingston-road, Ham	do.
Two Houses, Spaines-road, Fartown, Yorks	.....	J. Berry, Archt. 9, Queen-street, Hudderfield	do.
Stores, West-street, Bridlington Quay	Capt. R. Watson	S. Dyer, Archt. Quay-road, Bridlington Quay	do.
*Works and Materials (various)	Hampstead Vestry	Surv. Vestry Hall	do.
*Works and Articles (various)	St. Luke's Vestry	Vestry Hall, City-rd. E.C.	do.
*Ballast, Gravel, and Hogg'n	St. James Vestry, Westminster	T. H. Munsey, Vestry Hall, Piccadilly	Feb. 17
*Erection of Portion of Stone Church	.....	C. J. Ferguson, 42, Clareville-grove, S. Kensington, W.	do.
*Alterations to School	Macclesfield Corp.	J. Stevens, 88, Mosley-st. Manchester	do.
Alterations to Market, &c.	Bristol Corp.	T. H. Yabbicom, C.E. 51, Princes-st. Bristol	do.
Alterations to Business Premises, Grassiot, near Maryport	W. Laird	C. Eaglesfield, Archt. Maryport	do.
Market and Fire Engine Station	Gravesend T.C.	E. J. Bennett, Archt. 24, Darnley-rd. Gravesend	do.
Road Materials	Smallburgh R.D.C.	S. Pemberton, Dist. Surv. Stalham, Norfolk	do.
Forty-Four Houses, Penydarren, Merthyr	Gwaelodygarth Bilding. Club	Woodman & Williams, Archt. Penydarren	do.
Additions to Bishop Goodwin Memorial Schools, Carlisle	.....	G. D. Oliver, Archt. 5, Lowther-street, Carlisle	do.
Vestry at Church, Corwen, Wales	.....	J. Williams & Son, Archt. Corwen	do.
*Alterations to Asylum	Poplar and Stepney Sick Asylum	J. & S. F. Clarkson 136, High-street, Poplar	do.
Church, Savile Town, Dewsbury, Yorks	.....	C. J. Ferguson, Archt. 42, Clareville-grove, South Kensington	do.
School, Gwaelodygarth, Wales	Pentyrch Sch. Bd.	E. M. B. Vaughan, Archt. Cardiff	Feb. 18
Alterations to Premises, Hampson, near Eliel, Lancs.	.....	Austin & Paley, Archt. Lancaster	do.
Granite Setts, &c.	Stockport Corp.	J. Atkinson, C.E. Central Buildings, St. Petersgate, Stockport	do.
School	Frinton (Essex) S.B.	S. T. James, Frinton-on-Sea	do.
Technical Schools, Lower Kevin-st. Dublin	Governors	W. M. Mitchell, Archt. 5, Leinster-st. Dublin	do.
Three Shops, Fleece-street, Keighley	Fleece Mills Co. Ltd.	W. & J. B. Bailey, Archt. 1, Scott-street, Keighley	do.
Soap Works, Thwaites, nr. Keighley, Yorks	.....	Barber, Hopkinson & Co. Archt. Keighley	do.
Granite Kerbing	Brighton Corp.	F. J. C. May, C.E. Town Hall	do.
Sewerage Works	Uxbridge R.D.C.	J. Anstie, C.E. 17, Victoria-st. Westminster, S.W.	do.
House, &c. Thornhill Edge	Dewsbury Indus. Soc. Ltd.	Holton & Fox, Archt. Westgate, Dewsbury	do.
County Schools, Ebbw Vale, Mon.	.....	Thos. Hughes, School Offices, Ebbw Vale	do.
Three Shops, Fish Market	Darwen (Lancs.) Corp.	W. R. W. S. Saville, Boro. Surv. Darwen	do.
House, Tytler-street, Forres, N.B.	.....	Ross & Macbeth, Archt. Inverness	Feb. 19
Road Materials	Holland (Lincs) C.C.	H. C. Johnson, Sessions House, Boston	do.
Two Pavilions, Tarn Close	Ulverston (Lancs.) Cricket Club	N. E. Barnes, 14, Union-street, Ulverston	do.
Additions to National School, Settle	Managers	Hy. Ross, Archt. Cannon-street, Accrington	do.
Additions to Grammar School, Woodbridge	Governors	F. J. A. Wood, Church-st. Woodbridge	do.
Dwelling House, Rhodes-street Halifax	.....	C. F. L. Horsfall & Son, Archt. Lord-st. Chmbrs. Halifax	do.
Offices, St. Thomas, Exeter	Willey & Co.	C. E. Ware, Archt. Gandy-street, Exeter	do.
Business Premises, Market-street, Omagh	Graham, Son, & Wilson	W. Barker, Archt. Londonderry	do.
*Works and Materials (various)	St. Pancras Vestry	W. N. Blair, Vestry Hall, Pancras-road, N.W.	Feb. 21
Refuse Destructor	Plymouth Corp.	J. Paton, Boro. Engr. Town Offices	do.
Hartshill Stone	Banbury T.C.	N. H. Dawson, Boro Surv. Town Hall	do.
Macadam	Hull Corp.	A. E. White, C.E. Town Hall	do.
Sewerage Works, Burnaston	Burton-on-Trent Corp.	G. T. Lynan, Boro Engr. Burton-on-Trent	do.
Sewer	Bury (Lancs.) Corp.	J. Cartwright, Boro Engr. Town Hall	do.
School, Tredegar, Mon.	County School Managers	C. Dauncey, Tredegar	do.
Making Two Roads, Carmyllie, Arbroath, N.B.	.....	F. Minto, Surv. 1, Hillend-road, Arbroath	do.
Villa, Elgin, N.B.	.....	R. B. Pratt, County Bank House, Elgin	do.
Additions to School, Oak-street	Bath Sch. Bd.	W. J. Willcox, Archt. 1, Belmont, Bath	do.
Walling, Doe Park	Denholme (Yorks). U.D.C.	W. B. Woodhead & Son, C.E 18, Exchange, Bradford	do
School Work, The Mall, Armagh	.....	J. J. Phillips & Son, Archt. 61, Royal-avenue, Belfast	do.
Guernsey Granite, &c.	Dover T.C.	E. W. Knocker, Castle Hill House, Dover	Feb. 22
*Concrete Roof to Reservoir	Worthing Corp.	J. Mansergh, 5, Victoria-street, S.W.	do.
Water Works	Portland U.D.C.	E. J. Elford, C.E. Council Offices, New-road, Portland	do.
Stone	Bridgwater R.D.C.	Mr. Ingram, Surv. Cannington, Somerset	do.
Sewerage Works, London-road	Dover T.C.	H. E. Stilgoe, C.E. Town Hall	do.
*Materials (various)	C. B. West Ham	Boro Engr. Town Hall, Stratford	do.
*Works and Materials	Hackney Vestry	J. Lovegrove, Town Hall, Hackney	Feb. 23
Road Materials	Levenshulme (Lancs) U.D.C.	J. Jepson, C.E. Union-road, Stockport	do.
Harbour Works, Buckpool, Buckie, N.B.	Fishery Board	W. C. Robertson, 25, Baron-st. Buckie, Banffshire	do.
Warehouse, &c. Clough House Mills, Huddersfield	.....	J. Kirk & Sons, Archts. Huddersfield	do.
Additions to Police Station, Budleigh Salterton	Devon Standing Joint Committee	E. H. Harbottle, Surv. Queen-street, Exeter	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
School, Preston	Royal Cross School for the Deaf	Sames & Green, 65, Northgate, Blackburn	Feb. 23
*Hardwood Paving, Flagging, Curbing, &c.	Kingston-on-Hull Corp	A. E. White, Town Hall, Hull	do.
Additions to Schools, Purwell, Yorks.	Batley Sch. Bd.	W. Hanstock, Archt. Branch-road, Batley	Feb. 24
Sewerage Works, North Wales	Penmaenmawr U.D.C.	E. Worrall, Surv. Council Offices, Penmaenmawr	do.
Additions to Church, Marsden, near Huddersfield	.....	J. Kirk & Sons, Archts. Huddersfield	do.
Bridge Works, Bridge-street, &c.	Leicester Corp.	E. G. Mawbey, C.E. Boro. Surv. Town Hall	Feb. 25
Electric Lighting Station, James-street	Carlisle Corp.	H. C. Marks, C.E. 36, Fisher-street, Carlisle	do.
*Articles and Materials	Walthamstow U.D.C.	G. W. Holmes, Town Hall, Walthamstow	do.
*Hartshill Granite	Thame R.D.C.	J. Goodenough, Thame	Feb. 28
*Oil Engine, &c. Pumps	Dorking Water Co.	J. Mansergh, 5, Victoria-street, S.W.	do.
*Painting at Hospital	Hornsey U.D.C.	E. J. Lovegrove, Offices, Southwood-lane, Highgate	do.
*Painting Lamp Columns and Street Name Plates	do.	do.	do.
Additions to Chapel, Pisgah, Glam.	.....	D. Jones, 146, High-street, Cymmer, Porth	do.
Five Almshouses and Offices	Boro. of Lyme Regis	Council Rooms, Lyme Regis	do.
Bridge, Stubb's Water, Wootton Fitzpaine	Bridport R.D.C.	J. J. Roper, 74, East-street, Bridport	do.
Sewerage Works, near Leeds	Hunslet R.D.C.	S. Shaw, C.E. Dewsbury	do.
*6,000 tons Welded Steel Pipes	Birmingham Corp.	J. Mansergh, 5, Victoria-street, S.W.	do.
*Laying-out Site and Erecting Building Pavilions, &c.	Malvern Hospital Com.	The Surveyor	Mar.
Five Houses, Pitt-street	Longridge Co-op. Soc. Ltd.	W. Mumford, Archt. 33, Guildhall-street, Preston	do.
Additions to Court House, Llanrwst	.....	R. L. Williams, County Surv. Denbigh	do.
*Enlarging Post Office, Douglas, Isle of Man	Commrs. H.M. Works	12, Whitehall-place, S.W.	do.
*Water Tower, Wells, Pumps, Engine, Fire Hydrants, &c.	Farnham & Hartley Wintney School Dist.	A. Ansell, 21, Buckingham-street, Strand, W.C.	Mar. 2
Outfall Sewer, Alexandra Park	Oldham Corp.	S. A. Pickering, C.E. Town Hall	do.
Schools	Thornbury (Glos.) Sch. Bd.	S. Fudge, Archt. Thornbury	do.
*Extension of Middlesbrough Dock	N.E. Rly. Co.	Sir J. Wolfe Barry, 21, Delahay-st. Westminster	do.
*Construction of Bridge and Approaches and Station Buildings, Pallion, near Sunderland	do	C. A. Harrison, Central Station, Newcastle-on-Tyne	do.
School, Marlborough-road	Cardiff Sch. Bd.	Habershon & Fawckner, Archts. Pearl-st. Cardiff	do.
Sewerage Works	Oldham Corp.	S. A. Pickering, C.E. Town Hall	do.
Road Materials	Brixworth (Northants) R.D.C.	W. C. Woodford, 18, Market-square, Northampton	Mar. 3
Widening Bridge, Regent-road	Salford Corp.	Borough Engineer, Town Hall	Mar. 4
*Sewer Pipes, Gully Traps, &c.	Bath U.S.A.	C. R. Fortune, Guildhall, Bath	Mar. 5
*Various Materials	Bermondsey Vestry	Vestry Clerk, Spa-rd. S.E.	do.
*Buildings, Walling, &c.	Dartford Union	G. H. Tait, Lowfield st. Dartford	Mar. 14
Additions to Coal Stores, Lapp's Quay, Cork	A. Sutton	J. F. M'Mullen, Archt. 30, South Mall, Cork	No date
Additions to Business Premises, Welsh-street, &c. Belfast	A. M'Carthy	W. J. Moore, Archt. Whitehall Buildings, Anu-street, Belfast	do.
Constabulary Barrack, Ballinagh, co. Cavan	.....	R. N. Somerville, County Surv. Cavan	do.
Offices, Millbay-road, &c. Stonehouse, Devon	Western Counties Co-op Assoc. Ltd.	W. T. M. Mear, Archt. Wadebridge	do.
Farm Buildings, Runshaw Moor, Chorley	.....	Jolly & Buckley, Archts. High-street Chorley	do.
Store and Three Houses, Mills Hill, Lancs.	Middleton and Tonge Indus. Co-op. Soc.	F. W. Dixon, Archt. Trevelyan-buildings, Manchester	do.
Mission Hall and Two Shops, Oldham-road, Miles Platting	Committee	do.	do.
Workmen's Club, Haslingden, Lancs	.....	Secretary, Station-road, Haslingden	do.
Bridge and Landing Stage, Rock Ferry	Birkenhead Corp.	C. Brownridge, C.E. Town Hall	do.
Eight Houses, Victoria-terrace, Brierfield, Lancs.	.....	W. Dent, Archt. Railway-street, Nelson	do.
Five Houses, Brudenell-road, Leeds	.....	W. Squires, Archt. Royal Exchange-chmbrs. Leeds	do.
Warehouse, Cooke-street, Keighley	.....	Judson & Moore, Archts. York-chmbrs. Keighley	do.
Church Hall, Cromarty, N.B.	.....	W. L. Carruthers, Archt. 42, Union-st. Inverness	do.
Additions to Kyle House, Kyleakin, Inverness	.....	do.	do.
Additions to Roy Bridge Hotel, Lochaber, N.B.	.....	do.	do.
Additions to Inchbae Lodge, Garve, N.B.	.....	Dun Cameron, Archt. Academy-bldgs. Inverness	do.
Additions to Millburn Distillery	.....	do.	do.
Two Semi-detached Houses, Lovat-road, Inverness	.....	do.	do.
Pair Semi-detached Villas, Farsley, Yorks.	.....	Fairbank & Wall, Archt. Craven Bank Chambers, Bradford	do.
Schools, New Hirst	Ashington Coal Co.	Secretary, Colliery Offices, Ashington, co Durham	do.
Church, Ballynafeigh, Ireland	.....	Forman & Aston, Archt. Queen's Bldgs. Belfast	do.
Twelve Cottages, Goose-Butt-street, Rowmarsh, Lancs.	.....	J. Platts, Archt. Rotherham	do.
Pair Semi-detached Villas, Whitehead, Belfast	.....	Russell & Lockwood, Archt. 16, Waring-st. Belfast	do.
House and shop, Eastbourne	.....	W. H. Raffles, Archt. 9, Argyll-st. W.	do.
Four Semi-detached Cottages, Aberfan, Wales	.....	C. Bailey, Archt. Quaker's-yard, Aberfan	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Clerk of Works	Tottenham U.D.C.	2*l.* 10*s.* per week	Feb. 15
*Clerk of Works	Shoreditch Vestry	3*l.* 3*s.* per week	Feb. 17
*Inspector of Nuisances	Hereford Corp.	150*l.* per annum	Feb. 19
*Inspector and Sub-Inspector of Works	Neath T.C.	Inspector 3*l.* and Sub-Inspector 2*l.* 2*s.* per week	Feb. 1
*Borough Engineer and Surveyor	South Shields T.C.	500*l.* rising to 700*l.* per ann.	do.
*Clerks of Works (Four)	Manchester Corp.	Three at 3*l.* 3*s.* and one at 4*l.* 4*s* per week	Feb. 22
*Assistant Superintendent for Sewage Works	Willesden U.D.C.	2*l.* per week and residence	do.
*Surveyor	St. Marylebone Vestry	600*l.* per annum	Mar. 7
*Assistant Surveyor	do.	250*l.* per annum	do.
*District Superintendent	do.	150*l.* per annum	do.
*Clerk of Works	Sandbach U.D.C.	.....	No date

Those marked with an asterisk (*) are advertised in this Number. *Competition, p.* iv. *Contracts, pp.* iv, vi. vii. viii. *&* ix. *Public Appointments, pp.* xviii. *&* xxii.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 o/o/o
Teak, E.I.	load	12/0/0 15/2/0
Sequoia, U.S.ft.cu.		1/8 1/10
Ash, Canada, load		3/0/0 4/5/0
Birch, do.		2/15/0 4/7/6
Elm, do.		3/15/3 4/15/3
Fir, Dantsic, &c..		1/9/3 3/9/0
Oak, do.		2/10/0 3/10/0
Canada		3/15/0 5/0/0
Pine, Canada red		c/o/o c/o/o
Do. yellow		2/2/6 4/2/6
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg..		5/0/0 6/10/0
Wainscot, Riga, &c., log		2/5/0 5/0/0
Odessa, crown		3/5/0 5/0/0
Deals, Finland 2nd & 1st std 100		7/10/0 8/2/0
Do. 4th & 3rd		7/10/0 8/2/0
Do. Riga		6/0/0 7/0/0
St. Petersburg, 1st yellow		9/10/0 12/0/0
Do. 2nd yellow.		8/12/0 10/0/0
Do. white		8/0/0 11/0/0
Swedish		8/10/0 15/0/0
White Sea		9/0/0 15/10/0
Canada, Pine 1st		19/5/0 25/5/0
Do. do. 2nd		13/15/0 16/5/0
Do. do. 3rd, &c.		6/5/0 9/15/0
Do. Spruce, 1st		9/15/0 11/5/0
Do. do. 3rd and 2nd		7/5/0 8/5/0
New Brunswick		6/15/0 7/5/0
Battens all kinds		5/0/0 18/0/0
boards, sq., 1 in. prep. 1st		0/9/0 c/16/6
Do. 2nd		0/7/6 c/13/0
Other qualities—		c/6/0 c/7/0
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/3½ /4½
Mahogany, Cuba		/5 /6½
St. Domingo, cargo av.		/4½ c/1/3
Mexican, do. do.		/3½ /4½
Tobasco, do. do.		/4 6½
Honduras, do.		/4½ /6
Box, Turkey, ton		4/c/o 15/2/0
Rose, Rio		7/2/0 14/0/0
Bahia		6/0 0 12/0/0
Satin, St. Doming.		c/o/5 o/1/0

TIMBER *(continued)*.		
Satin, Porto Rico		0/0/6 c/1/6
Walnut, Italian		o/-/3 c/o/7
METALS.		
Iron—Pig, in Scotland	ton	2/5/8½ c/o/o
Bar, Welsh, in London		5/15/0 5/17/6
Do. do. at works in Wales		5/10/0 5/12/6
Do. Staffordshire, in London		6/5/0 7/10/2
COPPER—British cake and ingot		52/-/o 53/0/2
Best selected		53/0/0 53/10/2
Sheets, strong		58/-/o 58/1-/o
Chili bars		49/3/9 c/o/o
YELLOW MTL. lb.		4½d. 5d-
LEAD—Pig Spanish	ton	12/7/6 o/o/o
English com. bands		12/12/6 o/c/o
Sheet, English 6 lbs. per sq. ft. and upwards		13/12/6 c/o/o
Pipe		14/2/6 o/o/o
ZINC—English sheet	ton	20/5/o */c/o
Vieille Montagne		21/10/- o/o/o
Spelter		17/17/6 18/o/o
TIN—Straits		62/6/3 o/o/o
Australian		63/17/6 64/7/6
English Ingots		66/-/o 67/-/o
Banca		61/o/o o/o/o
Billiton		59/15/0 60/-/o
OILS.		
Linseed	ton	15/15/0 c/o/o
Cocoanut, Cochin		27/15/o c/o/o
Do. Ceylon		22/-/o c/o/o
Palm, Lagos		21/15/o o/o/o
Rapeseed, English pale		27/10/o c/o/o
Do. Brown		26/o/o c/o/o
Cottonseed ref.		14/5/o 15/5/o
Oleine		13/10/o 14/10/o
Lubricating U.S.		c/5/3 c/7/6
Do. Black		o/5/o o/6/6
TAR—Stockholm	barrel	1/o/o o/o/o
Archangel		c/12/6 c/-/o
Turpentine		24/10/o o/c/o

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ALNMOUTH.—For the erection of a house, Argyle-street, for Mr. Chas. Nettleship. Mr. G. Reavell, jun., architect, Alnwick:—

Masonry.—John Armstrong, Lesbury, Northumberland	£213 17
Joinery.—Done by employer.	
Plumbing.—Wilkin & Dickman, Alnwick	45 19
Tiling.—Jos. Purdie, Alnwick	32 17
Plastering.—Thos. Darling, Alnwick	48 18
Painting.—Jas. Wallace, Alnwick	10 9

BRISTOL.—For the erection of schools, Hotwells, for the School Board. Messrs. La Trobe & Weston, architects, 22, Clare-street, Bristol:—

H. A. Forse	£2,375	W. Church	£2,267
E. Walters	2,375	J. Perkins	2,250
E. Clark	2,385	Geo. Humphreys*	2,167
E. Love	2,287	*Accepted.	

Plumbing.

S. Mason	£108 19 3½	H. Povey	£141 0 0
J. James	165 0 0	G. F. Tuckey	135 0 0
J. Wilkins	145 0 0	A. Scull	134 10 0

[All of Bristol.]

CAMBRIDGE.—For the construction of roads, bridges, &c., for St. John's College. Messrs. J. Carter Jonas & Sons, surveyors. Quantities by the surveyors:—

W. Bell & Sons	£5,337 15 8	Siddons & Freeman	£3,737 0 0
W. Saint	4,994 0 0	Sindall	3,649 0 0
Thos. Adams	4,485 0 0	Chas. Kidman, Sturton-street, Cambridge (accepted)	3,602 8 0
Swann Bros.	4,126 13 0		
G. Bell	3,945 10 0		
Coulson & Lofts	3,840 0 0		

CHINGFORD (Essex).—For erecting a block of three shops at Chingford, Mr. J. Edward Still, architect, 82, Queen-street, E.C.:—

Oliver	£4,395	Castle & Son	£3,603
Dabbs	3,900		

CLOWN (Derby).—For additions to schools, for the School Board. Messrs. Rollinson & Son, architects, 13, Corporation-street, Chesterfield:—

G. Haynes	£770 0 0	C. Levick	£697 15 0
J. Turner	766 8 0	J. Fidler	696 0 0
J. Collingham	701 0 0	J. Jackson, Whitwell*	632 19 2
		* Accepted.	

DEVONPORT.—For alterations to business premises, 16 and 17, Cumberland-street, for Messrs. Josiah Clark & Son. Mr. Edgar M. Leest, architect, 109, Fore-street, Devonport:—

T. Jenkin & Son	£158 15	W. J. Oliver	£145 0
S. Perkins	149 10	[All of Devonport.]	

DOVER.—For the erection of boiler-house, &c., Marine Parade, for the Town Council. Mr. H. E. Stilgoe, C.E., Town-hall, Dover. Quantities by engineer:—

R. W. Paramor	£1,099 0 0	Locking Joint, Reading (accepted)	£975 0 0
Austen & Lewis	1,078 5 10		

DUDLEY.—For the erection of grammar school and house, St. James's-road, for the Governors. Messrs. Woodhouse & Willoughby, architects, 100, King-street, Manchester:—

R. Willcock	£8,265 0	W. H. Gibbs	£7,120 0
C. A. Horton	7,769 0	J. Harley & Son	6,900 0
H. Gough	7,510 0	J. Buxton	6,800 0
G. Brown	7,385 0	J. H. Whittaker & Co.	6,700 0
R. Thompson	7,372 5	Webb & Round, Dudley (accepted)	6,675 0
Holland & Son	7,290 0		

EAST MOLESEY.—For making up Seymour and Beauchamp roads, for the Urban District Council. Mr. J. Stevenson, Surveyor, Council's Offices, East Molesey:—

Free & Sons, Wimbledon*	£941	Clift Ford (informal)	£940
		* Accepted.	

ELTON.—For the erection of an inn, for Messrs. J. W. Cameron & Co., Ltd. Mr. E. A. Whipham, architect, 59, High-street, Stockton-on-Tees:—

H. F. Linton & Son	£2,216 2 1	Parks & Son, Stockton-on-Tees *	£1,877 0 0
A. Atkinson & Co.	2,116 9 10		
A. J. Cooke	1,958 0 0	* Accepted.	

FINEDON.—For erecting six houses, Banks and Well-street, Finedon, for Mr. C. Lilley. Messrs. Mosley & Anderson, architects and surveyors, Goodyear-chambers, Northampton and Finedon. Quantities by the architects:—

T. & C. Berrill	£1,496 0	A. J. Ball	£1,260 0
Coates & Son	1,420 0	J. Nicholls	1,199 12
S. Abbott	1,367 0	Johnson & Son, Earls Barton*	1,199 0
F. Henson	1,350 0	* Accepted.	
T. Chapman	1,298 0		

FINEDON.—For erecting a dwelling-house, with shop, &c., Wellingboro-road. Finedon, for Mr. T. Holly. Messrs. Mosley & Anderson, architects and surveyors, Goodyear-chambers, Northampton, and Finedon. Quantities by the architects:—

T. & C. Berrill	£815	T. Chapman	£645
R. Marriott	749	F. Henson, Finedon*	640
A. J. Ball	675	* Accepted.	

HENDON.—For the construction of artificial filter, pump-chamber, concrete carriers, &c., at the Sewage Outfall Works, for the Urban District Council of Hendon. Mr. S. Slater Grimley Engineer:—

	Above schedule for extras, per cent.	
M. S. Kitteringham	20	£1,535 16 3
C. Ford	25	1,521 18 0
Allen Bros.	15	1,355 19 4
R. Ballard, Ltd., Child's Hill, N.W.*	10	1,241 14 10
T. Adams	20	1,312 0 8
H. Lee	at the schedule	1,318 17 7
	* Accepted.	

HENDON.—For the supply of about 18 tons of 5-inch cast-iron pipes and specials, for the Urban District Council of Hendon. Mr. S. Slater Grimley, Engineer:—

	Sewage Outfall Works. 5 in. C.I. Pipes per Ton.	Special per Ton.	Hyde Sewerage Flanged pipes per Ton.
Macfarlane, Strang, & Co.	£7 0	—	£13 10 0
Pulsometer Engineering Co.	6 10	14 10	—
E. & W. Haley	6 0	10 0	—
Stanton Ironworks, near Nottingham*	5 10	13 0	9 17 3
Blakeborough & Son	—	—	9 10 0
	* Accepted.		

HENDON.—For the construction of 1,240 yds. of 12 in. sewer including manholes, lampholes, flushing chambers, &c., at The Hyde, for the Urban District Council of Hendon. Mr. S. Slater Grimley Engineer:—

	Best London stoneware pipes.	Best approved country pipes.
C. Ford	£2,332 0 0	£2,237 0 0
M. S. Kitteringham	2,328 19 3	2,232 14 3
Allen Bros.	1,984 11 2	1,910 16 2
E. W. Hollingsworth	1,958 0 0	1,853 0 0
W. Neave & Son	1,946 0 0	1,813 0 0
Rich. Ballard, Ltd., Child's Hill, N.W. *a	1,918 0 3	1,764 11 11
H. Lee	1,894 10 10	1,814 0 0
T. Adams	1,789 13 3	1,698 12 5

* Accepted in consequence of two tenders (a and b) taken together being the lowest.

KIRKCALDY (N.B.).—For the construction of reservoirs, &c, for the Waterworks Commissioners of Kirkcaldy and Dysart. Mr. W. D. Sang, C.E., Kirkcaldy:—

James Osborne	£108,505 4 1	Alex. Brunton & Son	£74,946 0 10
Jas. Young & Sons	97,250 2 0	Andrew Waddell & Son	74,232 3 5
Thomas Peattie	95,667 9 3	William Wilson	73,928 17 3
J. Mackay & Son	86,517 7 2	Robert Gilmour	69,626 6 5
Alex. Fraser, jun., Kirkcaldy*	75,259 12 0	* Accepted.	

LONDON.—For alterations, dilapidations, and fittings at the "Mercers Arms" public-house, Jubilee-street, Stepney, E., for Mr. R. C. Blow. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E.:—

	Alterations, &c.	Fittings.	Total.
A. E. Symes	£1,030	£628	£1,658
R. Williams & Son	919	715	1,634
H. Wall & Co.	894	654	1,548
J. & H. Cocks	863	626	1,489
W. Harper*	873	601	1,474
	* Accepted.		

LONDON.—For shop front fitting in American walnut, at Lady well-road, Lewisham, S.E., for Mr. Longstaff. Mr. A. Roberts, architect, 18, Nelson-street, Greenwich:—

Parnall & Sons, Limited	£230	S. Jerrard & Sons	£175
W. Parnall & Co., Limited	223	A. Marsh (accepted)	170

LONDON.—For electric light wiring of Messrs. Welch, Margetson, & Co.'s new warehouse, Moor-lane, E.C. Mr. Morgan Williams, consulting engineer, 39, Victoria-street, S.W. Mr. Alexander Graham, architect, Carlton-chambers, 4, Regent-street, W.:—

	Mains and Distribution Boards.	Branch Wiring at per point. 7/21 S.W.G. point.	3/22 S.W.G. point.	Estimated total for 721 points of 3/22 S.W.G.
H. M. Leaf	£393 0 0 ..	£1 3 0	£1 2 0 ..	£1,183 2 0
Strode & Co.	247 0 0 ..	1 10 0	1 1 0 ..	1,004 1 0
Townsend, Tamplin, & Makovski	278 18 9 ..	1 1 6	0 17 6 ..	924 16 3
Belshaw & Co.	230 0 0 ..	1 7 0	0 15 0 ..	770 15 0
Spagnoletti & Crookes*	270 0 0 ..	0 13 0	0 12 0 ..	702 12 0
		* Accepted.		

LONDON.—For electric light wiring of the Abbey Mansions, North Block, Victoria-street, S.W. Mr. Morgan Williams, consulting engineer, 39, Victoria-street, S.W. Mr. Charles J. C. Pawley, architect, 66, Victoria-street, S.W.:—
Estimated total for tenders No. 1 and No. 2, with branch wiring for 612, 3/22 S.W.G. points.

Electrical & General Engineering Co.	£1,656 0 0	Laing, Wharton, & Down	£991 9 6
Hill, Gifkins & Co.	1,342 14 0	Warburg, Dymond, & Co.	968 0 0
H. M. Leaf	1,147 10 0	Belshaw & Co.	929 15 0
Drake & Gorham	1,095 0 0	C. A. Hemingway*	838 12 0
Townsend, Tamplin, & Makovski	1,046 2 6	* Accepted.	

LONDON.—For alterations and additions at Albany-street Police-station, for the Receiver for the Metropolitan Police District. Mr. J. Dixon Butler, Architect. Quantities by Mr. W. H. Thurgood:—

Chesrum & Sons	£6,469	Scrivener & Co.	£5,595
Holloway Bros.	6,350	Higgs & Hill	5,594
Willmott & Sons	6,067	Perry & Co.	5,562
Sidney Hart	5,945	J. O. Richardson	5,555
Grover & Sons	5,916	Lathey Bros.	5,480
T. Parker	5,839	Lascelles & Co.	5,326
Lawrance & Son	5,689		

LONDON.—For the enlargement of the Batterseа fire station, for the London County Council:—

Marchant & Hirst	£6,195 0 0	Stimpson & Co.	£5,170 0 0
J. N. Try	5,337 10 11	C. F. Kearley	4,895 0 0

LONDON.—For the enlargement of the Hampstead fire station, for the London County Council:—

R. A. Yerbury & Sons	£5,243 0 0	W. Whiteley	£4,986 11 7
J. N. Try	5,109 10 7	F. Gough & Co.	4,854 0 0

LONDON.—For the reconstruction of the Holborn branch of the Fleet sewer between Gray's Inn-road and Southampton-street, for the London County Council:—

J. H. Neave	£14,464 4 3	J. Dickson	£13,245 3 1
T. Adams	13,762 4 9	J. Mowlem & Co.	10,888 10 2
Pedrette & Co.	13,311 16 3	E. Iles	10,395 15 0
F. A. Jackson & Son, Limited	13,299 5 9	C. W. Killingback & Co.*	9,978 13 5
		* Accepted.	

LONDON.—For the erection of a block of school buildings at Goodall-road, Leyton, E., for the Leyton School Board. Mr. William Jacques, Architect to the Board. Quantities by Messrs. R. L. Curtis & Sons:—

J. Catley	£23,995	Reed & Son	£20,217
Perry & Co.	21,560	G. Sharpe	19,967
S. J. Scott	21,531	Gregar & Son	19,283
Stimpson & Co.	20,567	F. J. Coxhead*	18,590
Kirk & Randall	20,830		

* Accepted subject to the approval of the Education Department.

MORLEY (Yorks).—For the erection of bakery, stables, &c., Fountain-street. Messrs. Buttery & Birds, architects, Morley:—

Masonry, Joinery, Slating.—J. & J. Sugden, High-street, Morley	£312 4
Plumbing.—M. A. Naylor, Commercial-street, Morley	3 0
Plastering.—D. Willy, Birstall	32 5

PAIGNTON (Devon).—For the erection of buildings at the gas-works, for the Gas Company. Mr. C. G. Dawson, engineer:—

W. Holmes	£722	Dart & Pollard	£550
Webber & Maunder	650	H. Webber & Sons, Paignton*	516
		* Accepted.	

PLUMPTON (Sussex).—Accepted for proposed new stables and lodge, for Mr. H. P. Edwards. Mr. Fredk. W. Foster, architect, 41, Bedford-row, W.C.:—

Longley, Crawley	£1,750

RUSHDEN.—For conversion of premises into shops and offices, for Mr. E. Claridge, Rushden. Messrs. Mosley & Anderson, architects and surveyors Goodyear-chambers, Northampton. and Finedon. Quantities by the architects:—

R. Cosford	£415 0	R. Marriott	£355 10
Whittington & Tomlin	379 0	H. Sparrow	355 0
J. Willmott, jun.	375 0	Hacksley Bros., Wellingborough*	350 0
T. Willmott	370 0	* Accepted.	
T. Swindall	365 10		

RUSHDEN (Northants).—For the erection of a villa residence, Kimbolton-road, for Miss K. Smith. Mr. H. Adnitt, architect and surveyor, High-street, Rushden. Quantities by the architect:—

R. Marriott, jun., (accepted schedule)	£630

RUSHDEN (Northants).—Accepted for the erection of a shoe factory in Glassbrook-road, for Mr. W. Hewitt. Mr. H. Adnitt, architect and surveyor, High-street Rushden. Quantities by the architect:—

T. Wilmott, jun.	£877 10s.

RUSHDEN (Northants).—For the erection of a villa residence, Pightles-terrace, for Mr. H. Bull. Mr. H. Adnitt, architect and surveyor, High-street, Rushden. Quantities by the architect:—

T. Wilmott, junr. (accepted on a schedule)	£1,399

RUSHDEN (Northants).—Accepted for the erection of a villa residence in Park-road, for Mr. F. Corby. Mr. H. Adnitt, architect, High-street, Rushden. Quanntities by the architect:—

Robt. Marriott, Rushden	£755

ST. ALBANS.—For erecting a house, Beaconsfield-road, for Mr. W. Payne. Mr. Percival C. Blow, architect, 7, London-road, St. Albans:—

Miskin	£956 0	Savage	£800 0
Bushell	895 0	Sparrow (accepted)	739 10
Dunham	830 0		

SEVENOAKS.—For erecting a Drill Hall, outbuildings, lavatories, drainage, and cottage, for the "G" company, 1st Vol. Batt. R. W. Kent Regiment. Mr. Thos. Potter, architect 47, London-road, Sevenoaks:—

	Hall.	Cottage.	Total.
Thomas & Edge	£1,529 0 0	£463 0 0	£1,992
Law	1,459 14 7	382 7 11	1,852
Jones	1,326 2 1	423 6 10	1,749
Irwin	1,280 0 0	433 0 0	1,713
Hodges	1,275 19 0	383 15 0	1,656
Wiltshire	1,250 0 0	375 0 0	1,625
Bevan	1,223 0 0	358 0 0	1,581
Barnes	1,170 0 0	346 0 0	1,516
Thomas	1,138 11 4	360 2 0	1,498

WAKEFIELD.—For the erection of two through houses, East Ardsley (Stanhope-road), for Mr. A. Longley, of Morley. Messrs. Buttery & Birds, architects, Queen-street, Morley. Quantities by the architects:—

Masonry.—A. Furness, East Ardsley	£213 10 0
Joinery.—D. Furness, Morley	106 10 0
Plumbing.—J. W. Stakes, Morley	14 5 0
Plastering.—E. Wilson, Morley	40 0 0
Slating.—Pickles Bros., Leeds	25 0 0

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the Works Committee brought up the following lists of tenders:—

ALBION-STREET.—Enclosing, draining and tar-paving the additional land:—

R. E. Williams & Sons	£930	J. Marsland	£485
Johnson & Co.	650	H. Line*	419
J. F. Ford	648		

BEN JONSON.—Enlargement—Infants, 125. The plans include adapting existing class-rooms for hall, fitting up existing covered playground under school for additional class-rooms, removing existing mezzanine floors, providing new cloak, teachers' and stock rooms for all departments, new outside steps for boys and girls, removing three existing water-closets for extension of urinal and providing new water-closets for female infants and teachers, providing new covered playgrounds for all departments, new drainage scheme, extending heating scheme, and enclosing and tar-paving the additional land:—

		Extra for building brickwork in cement.
W. H. Wagstaff & Sons	£9,380	£48
W. Shurmur	9,200	58
G. S. S. Williams & Son	9,200	66
J. Shillitoe & Son	9,088	66
Treasure & Son	9,020	60
Edwards & Medway	8,545	64
E. Lawrance & Sons	8,523	66
Johnson & Co.	8,354	79
McCormick & Sons	8,282	53
E. Triggs	7,943	60
J. Outhwaite & Son*	7,525	66

BURDETT-ROAD Congregational Church School.—Adapting premises for a temporary school:—

J. F. Holliday	£595	A. E. Symes	£428
T Kybett	462	T. Robev	421
G Barker	464	D. Gibb & Co.*	409
T. H. Jackson	459		

CANTERBURY-ROAD.—Providing infants' cloak-room, additional lavatory accommodation, and skylights in class-rooms:—

J. F. Ford	£629 0	H. Line	£465 0
W. V. Goad	625 0	Jones & Groves	449 0
W. Hammond	573 0	H. Leney	447 0
E. Triggs	554 19	Rice & Son*	439 0

CHILDERIC-ROAD.—Enlargement—Boys, 112; girls, 112; infants, 128; total, 352:—

		Extra for building brickwork in cement.
F. P. Bulled & Co.	£3,573 0	£59 0
Holloway Bros.	3 483 0	48 12
W. Downs	3.436 0	19 0
F. & H. F. Higgs	3 396 0	54 0
J. Shilliton & Son	3.394 0	54 0
Holliday & Greenwood	3,249 0	53 0
E. Triggs	3 238 0	50 0
J. & C. Bowyer*	3,168 0	53 0

DALGLEISH-STREET.—Providing and fixing hot-water coils in corridors (boys', girls' and infants'), and in one class-room (boys' and girls' respectively) and two class-rooms (infants') and fixing tubular boilers:—

J. C. & J. E. Ellis, Ltd.	£149 10	Strode & Co.	£137 0
J. Gray	149 0	J Fraser & Son	109 0
Comyn Ching & Co.	134 10	W. Simmons	107 15
J. Defries & Sons, Ltd.	130 0	W. James Cooper*	101 0

EDINBURGH-ROAD.—Providing and fixing hot-water coils in corridors, and fixing tubular boilers:—

Rosser & Russell, Ltd.	£107 5	J. Wontner-Smith, Gray, & Co.	£73 18
J. & F. May	106 0	G. Davis	70 0
J Gray	99 0	J. Grundy*	64 7
Vaughan & Brown, Ltd.	92 0		
Comyn Ching & Co.	88 10		

GOPSALL-STREET.—Erecting cookery and laundry centres with water closets for girls attending the centres, and enclosing, draining, and tar-paving the additional land:—

		Extra for building brickwork in cement.
Willmott & Son	£2 294 10	£54 15
W. Shurmur	2,172 0	72 0
H. Knight & Son	2.170 0	55 0
G. S. S. Williams & Son	2,129 0	61 0
J. Grover & Son	2,003 0	58 0
McCormick & Sons	2,181 0	48 0
T. L. Green	2,154 0	63 0
E. Lawrance & Sons*	1,982 0	60 0

HARWOOD-ROAD (Infants').—Fixing tubular boilers, and four large S.B. stove fronts. (Boys')—Fixing four large S.B. stove fronts:—

Comyn Ching & Co.	£153 10	J. Defries & Sons, Ltd.	£96 0
J. Wontner-Smith, Gray & Co.	109 15	J. F. Clarke & Sons	91 0
W. G. Cannon & Sons	98 15	Stevens & Sons*	82 5

JESSOP-ROAD.—Providing teachers' closets outside building and re-connecting existing closets to children's offices, and providing drainage:—

J. Garratt & Son	£1,335 0	W. V. Goad	£1,241 0
W. & H. Castle	1,327 0	Maxwell Bros., Ltd.	1 219 0
Johnson & Co.	1,289 16	G. Parker	1,180 0
F. & H. F. Higgs	1,269 0	W. Akers & Co.*	1,118 0
J. & C. Bowyer	1,258 0		

ROYAL-HILL.—New school—Boys. 176; girls, 176; infants' 200; total, 552; with school-keeper's house:—

		Extra for building brickwork in cement.
Foster & Dickson	£13,988	£114
Edwards & Medway	13,877	176
J. Shillitoe & Son	13,656	190
F. & H. F. Higgs	13,592	230
J. & M. Patrick	13 562	167
G. E. Wallis & Sons	12,986	152
E. Lawrance & Sons	12 964	210
Kirk & Randall	12,936	209
Treasure & Son*	12,706	193

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LANT-STREET.—Providing and fixing hot-water coil in Infants' class-room, and fixing tubular boiler:—

W. G. Cannon & Sons	£42 0	G. Davis	£32 0
J. Grundy	35 9	Berry, Campbell & Co.*	28 10
J. C. & J. S. Ellis, Ltd.	34 10		

ROYAL NORMAL COLLEGE.—Repairs to buildings, &c., on a running contract:—

W. Akers & Co.	+23 per cent. on schedule prices for repairs.
J. & C. Bowyer	+20 " " "
J. Garnham & Son	+20 " " "
J. Stewart	+15 " " "
H. Leney	+12½ " " "
W. Poole & Son*	+12½ " " "

WESTON-STREET.—Providing and fixing a partition to divide large room in girls' department:—

G. Brittain	£130 0	E. B. Tucker	£88 19
S. Musgrove	138 14	Wake & Dean	88 0
J. & A. Oldman	92 10	H. Line*	79 0

WESTON-STREET.—Providing and fixing hot-water coils, and fixing S.B. stoves in two large class-rooms (boys') and one large class-room (girls') and fixing tubular boilers; fixing S.B. stoves in one large class-room (infants'):—

J. & F. May	£120 0	Strode & Co	£97 0
Rosser & Russell, Ltd.	112 10	Strong & Collings	79 0
J. C. & J. S. Ellis, Ltd.	109 10	J. F. Clarke & Sons*	78 15
J. Defries & Sons, Ltd.	101 10		

* Recommended for acceptance.

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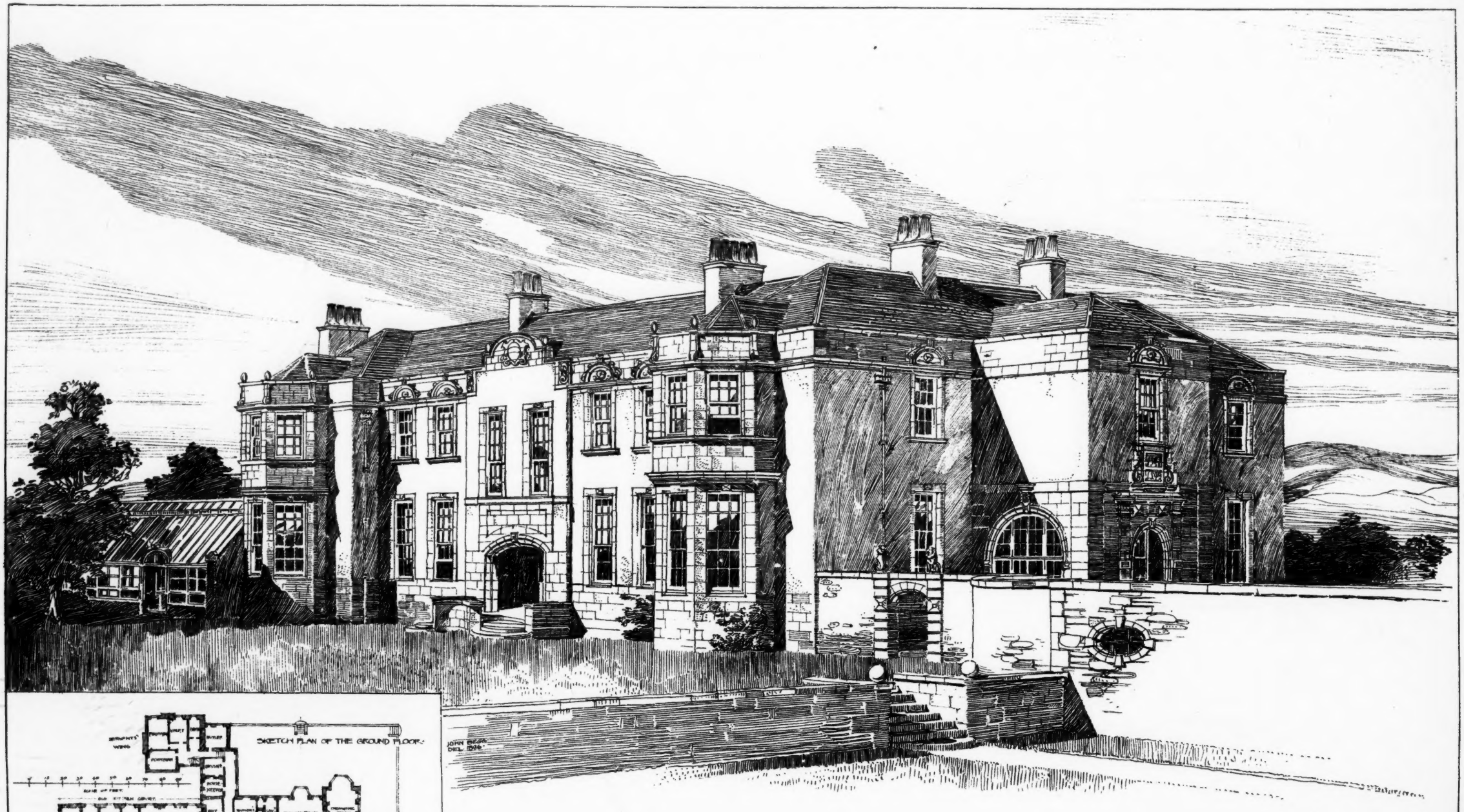

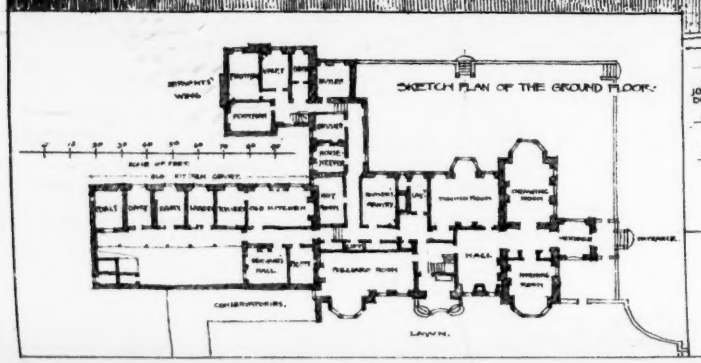

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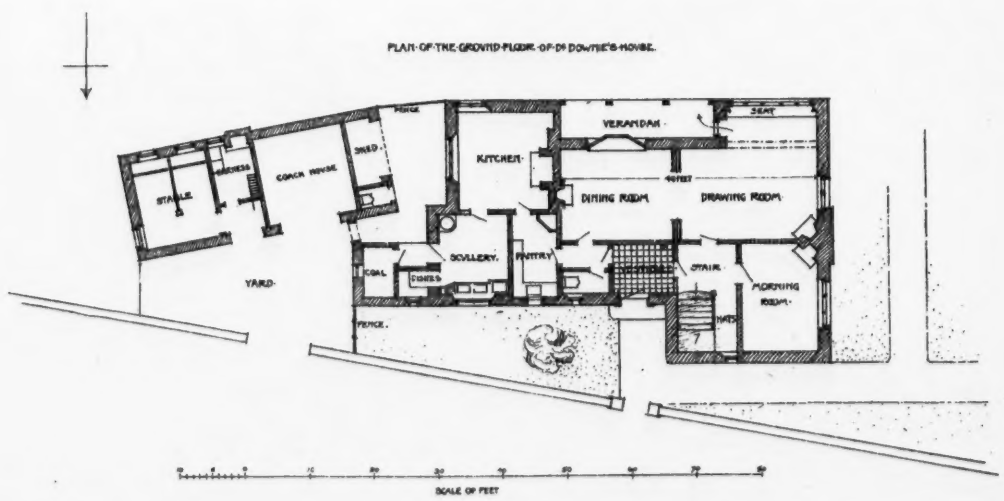

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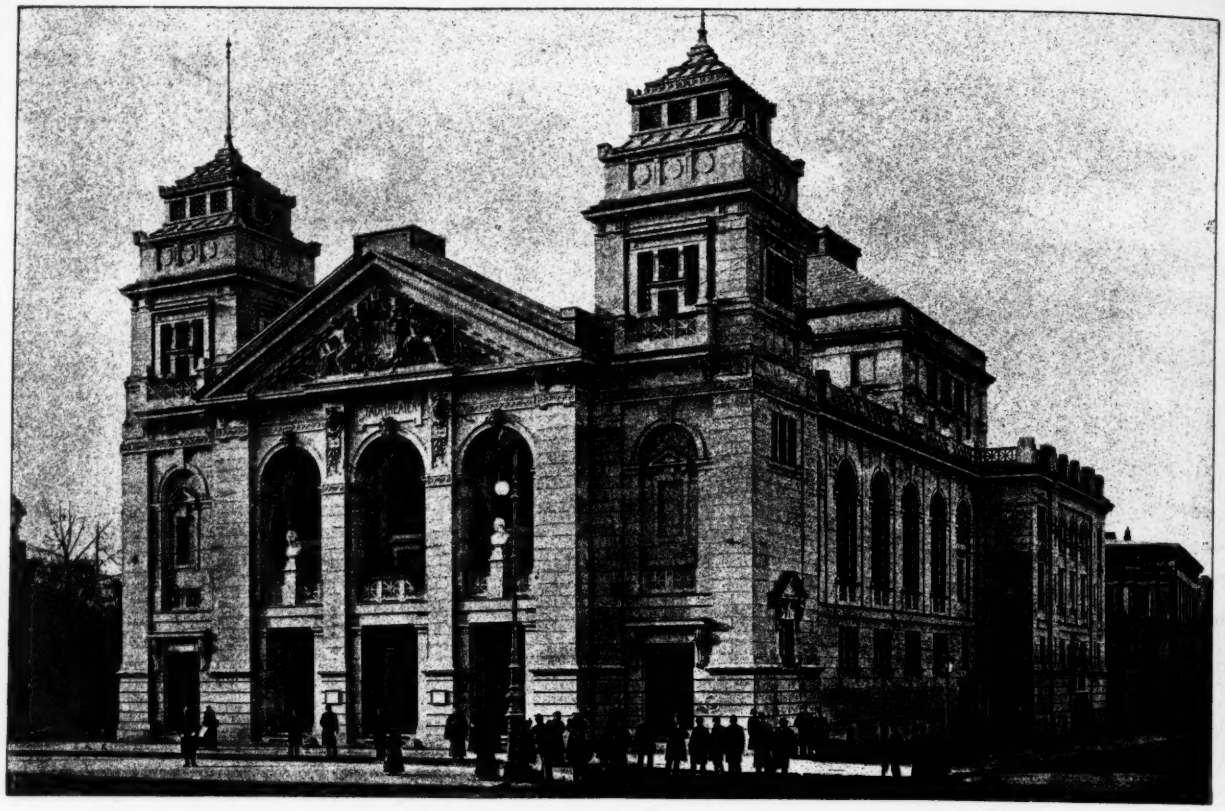

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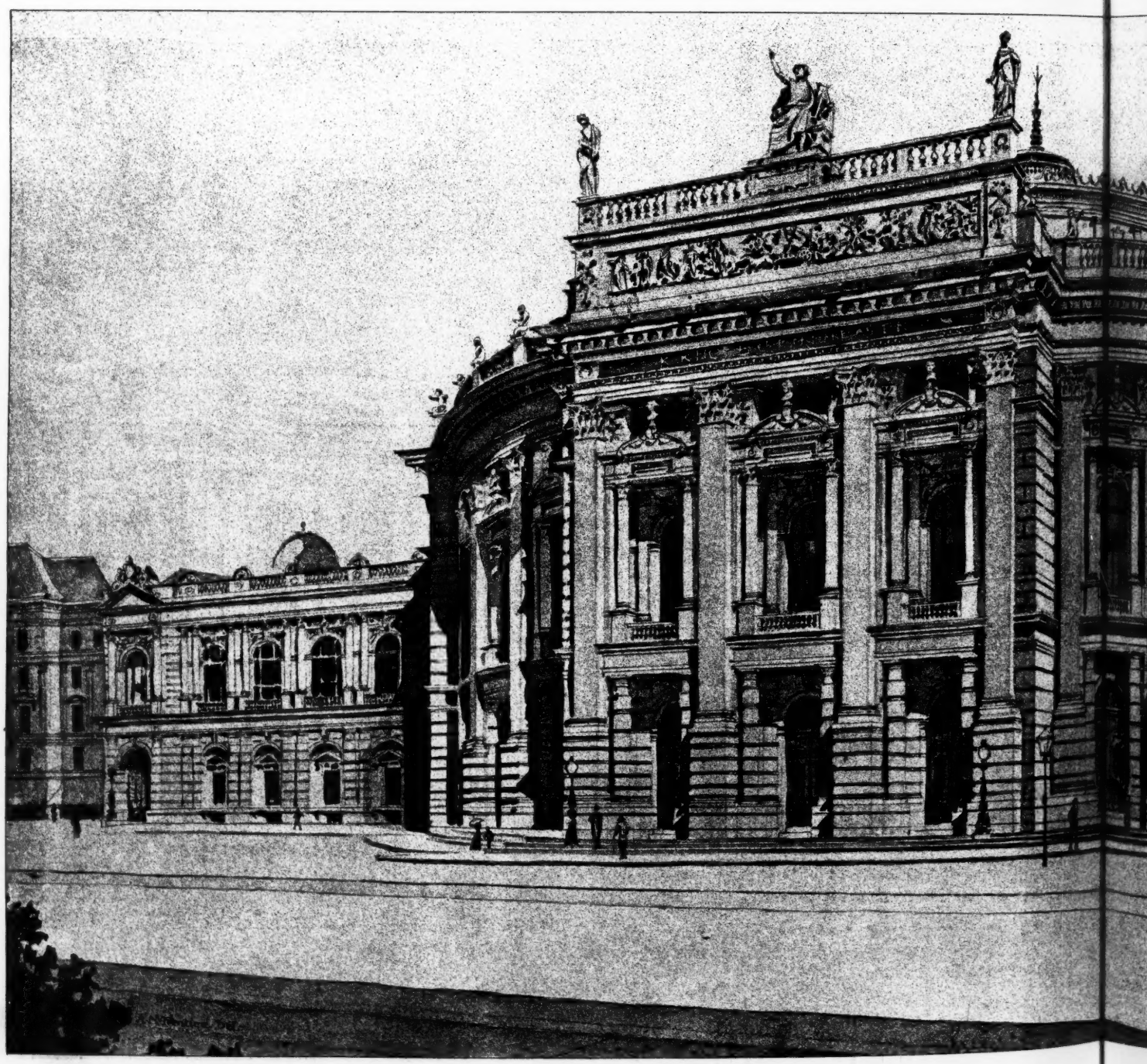

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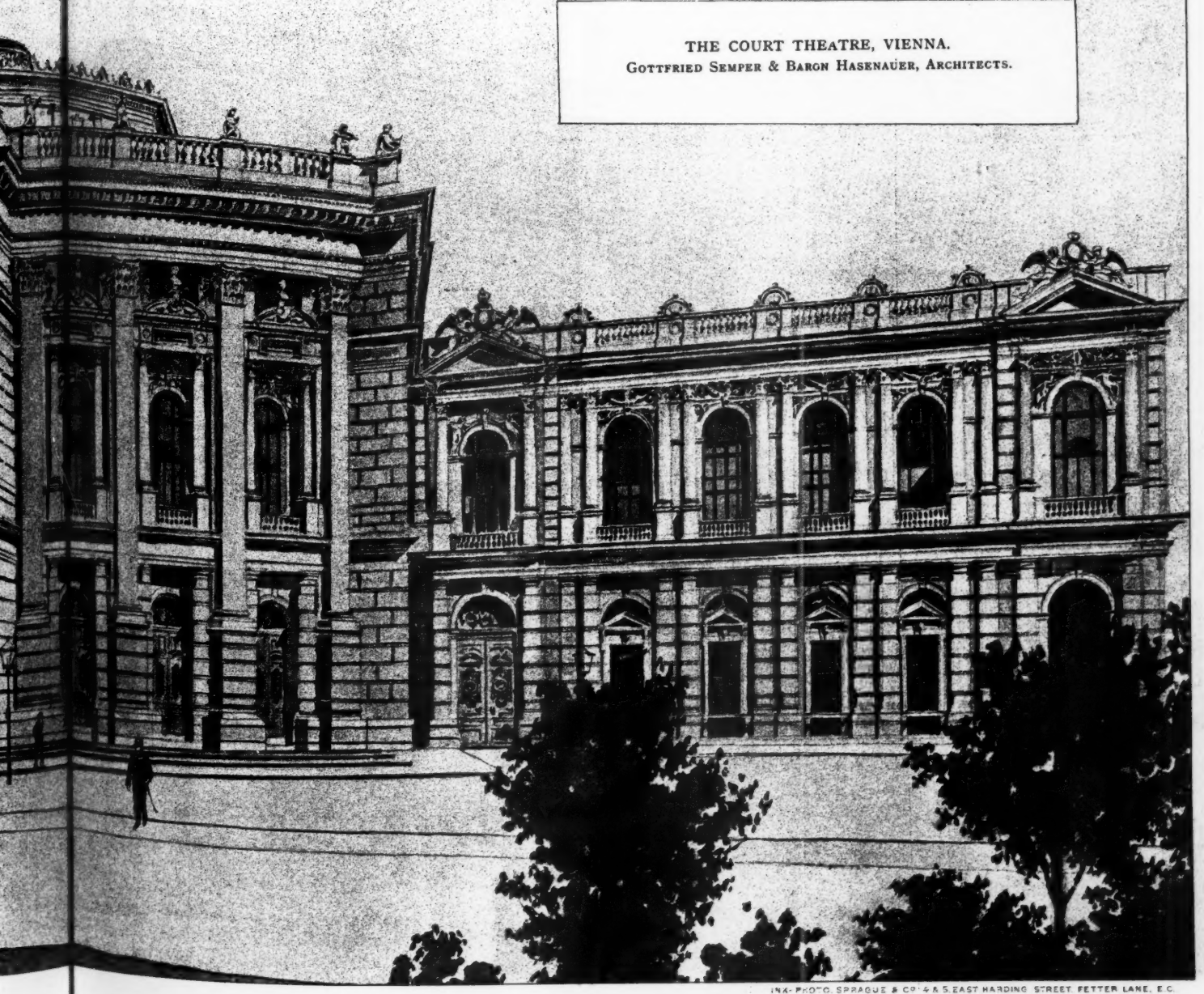

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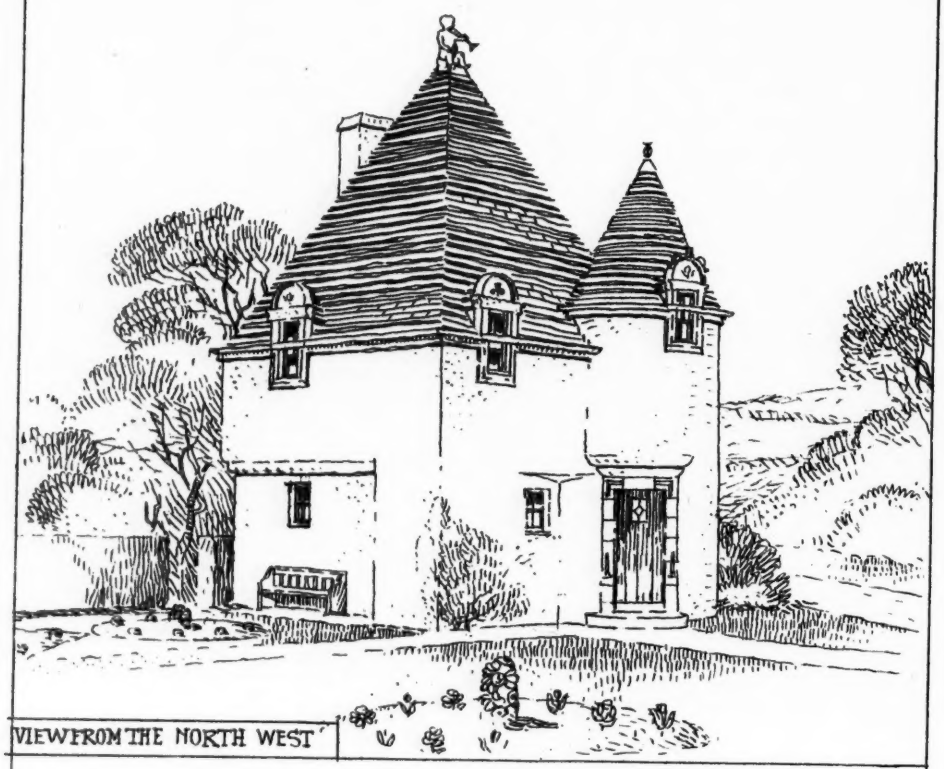

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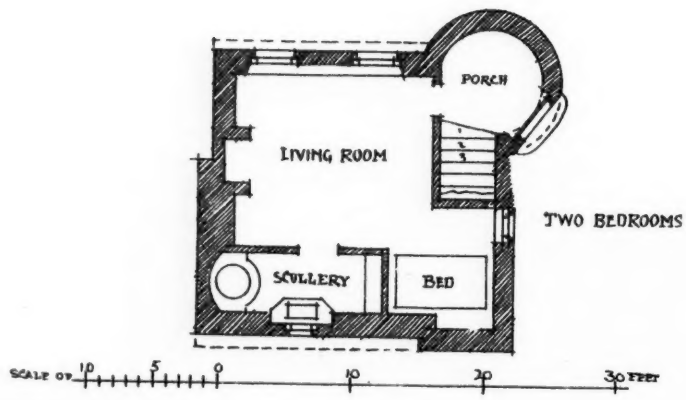

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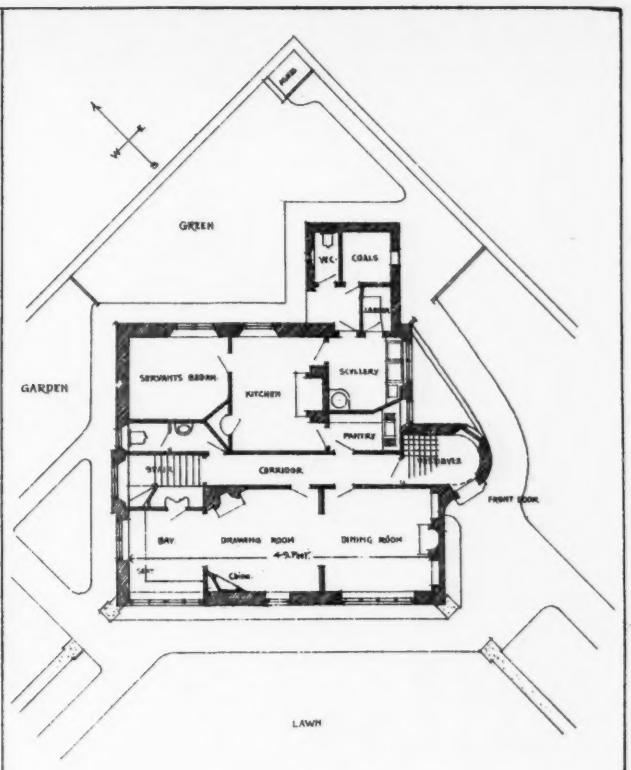

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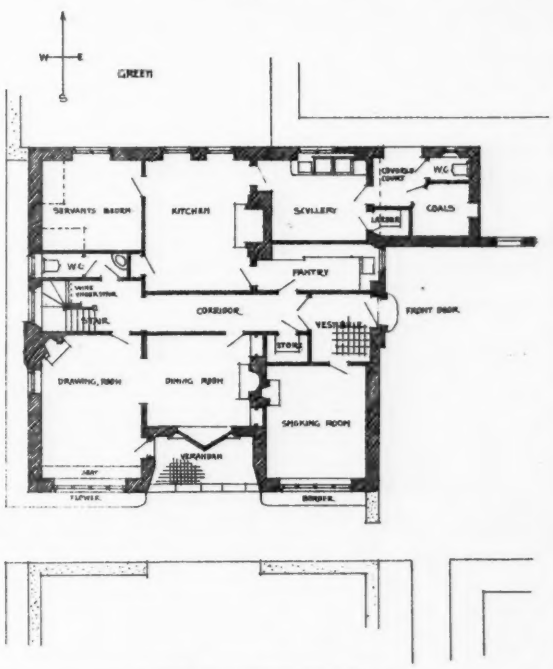

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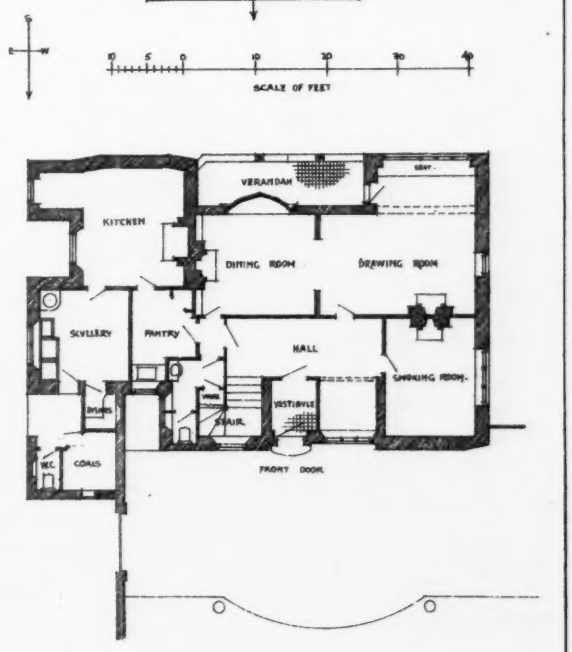

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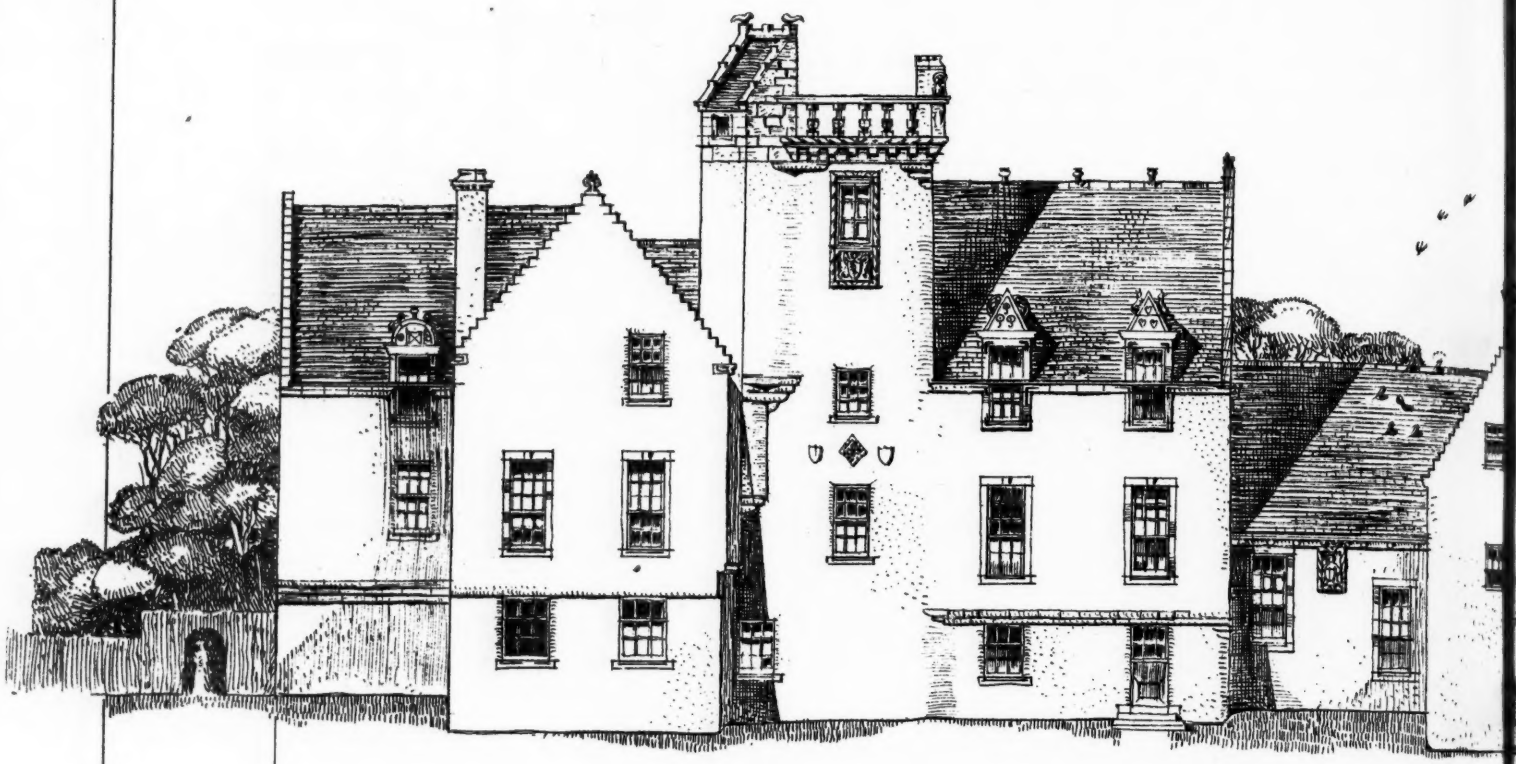

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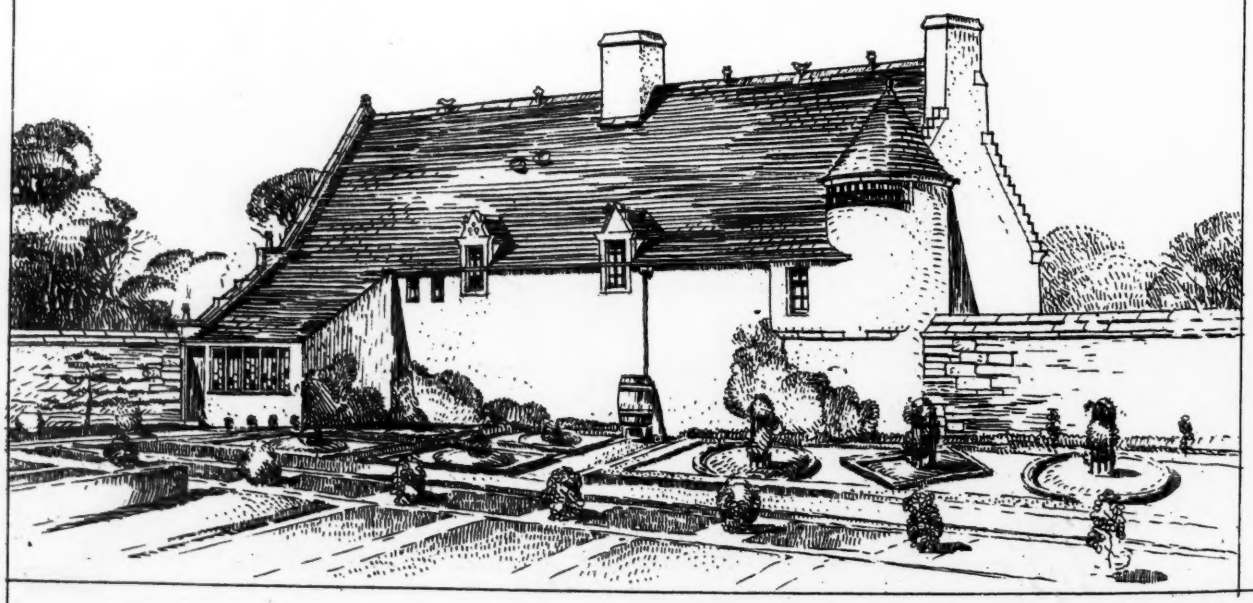
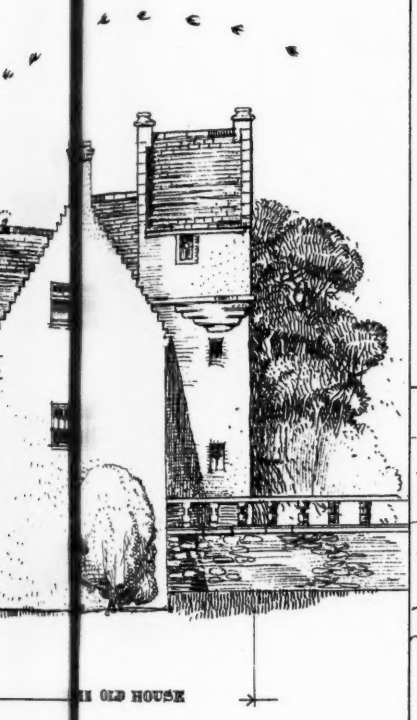


VIEW OF PART OF STABLE BVILDINGS
FROM THE GARDEN

FRONT OF OLD HOUSE



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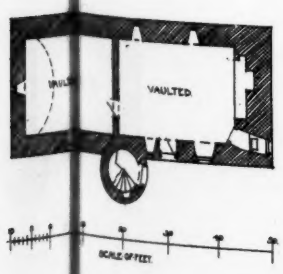
FRONT OLD HOUSE AS EXISTING.



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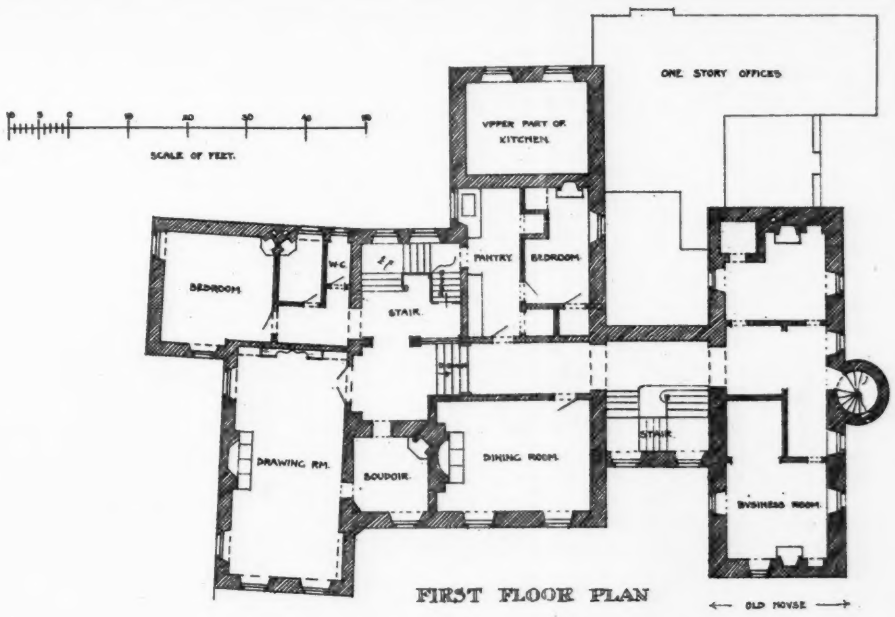

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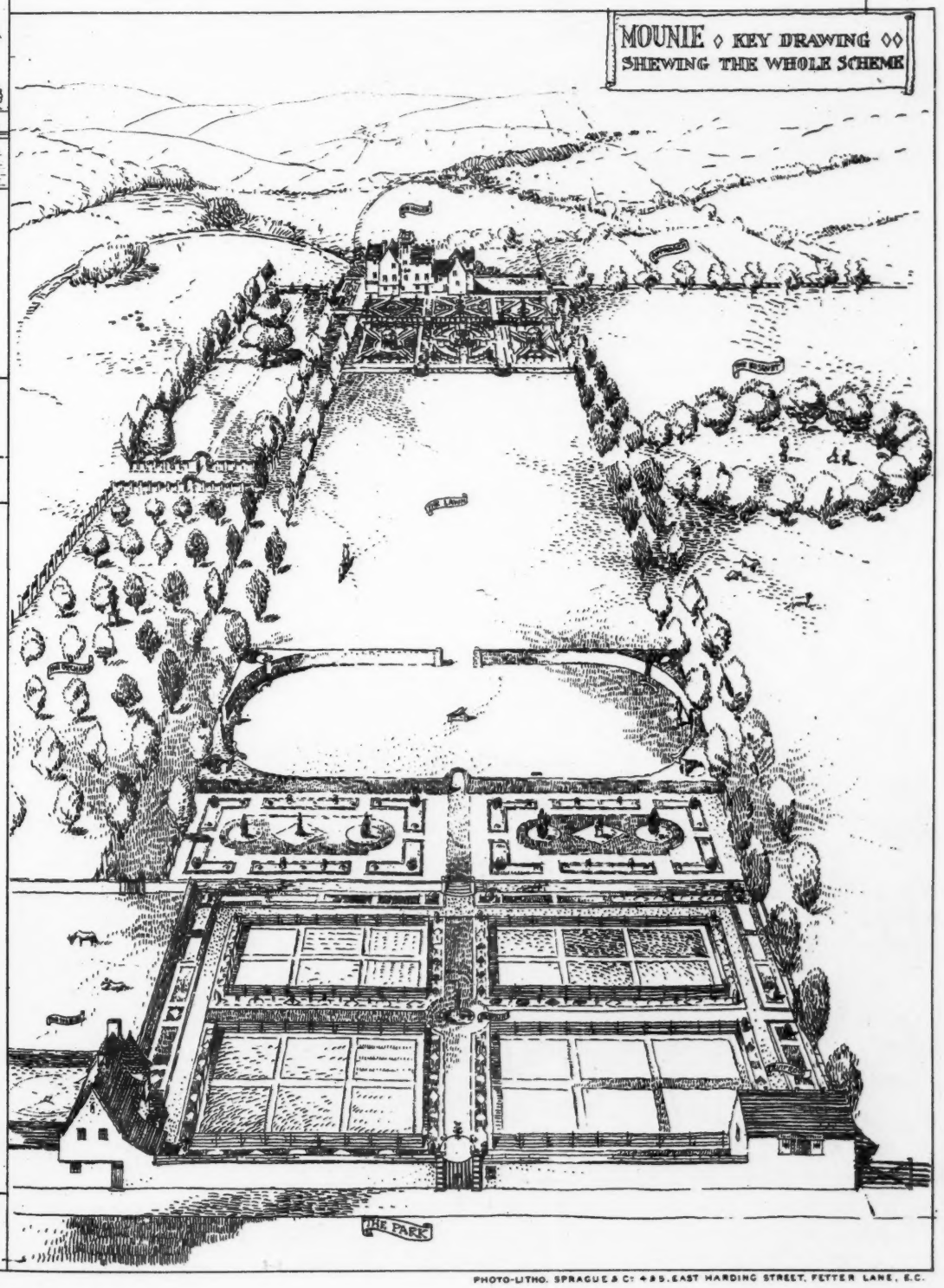

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